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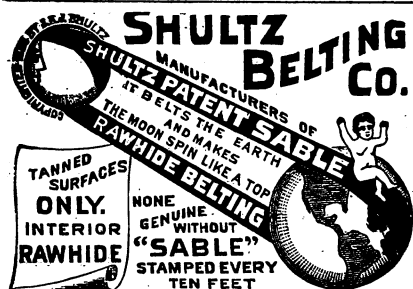
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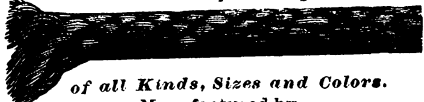
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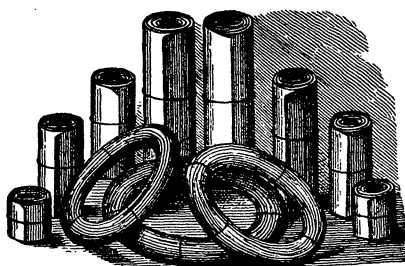
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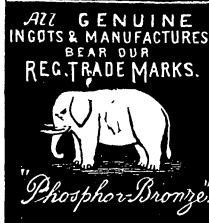
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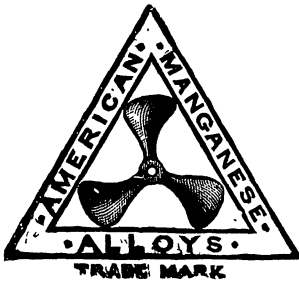
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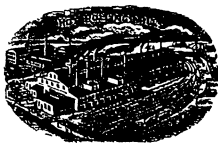


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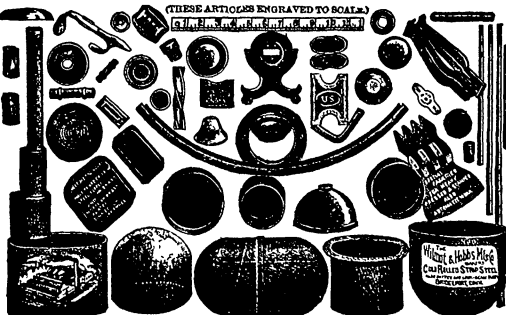
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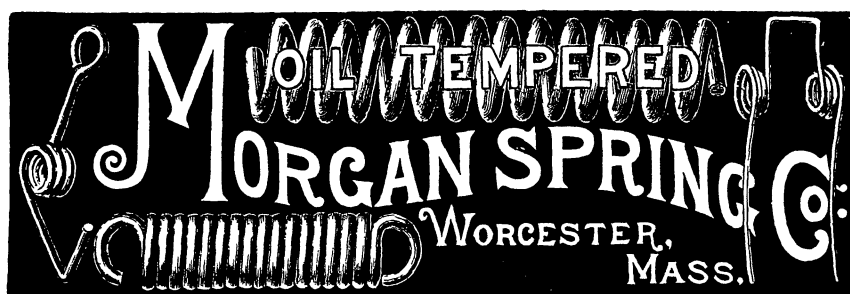
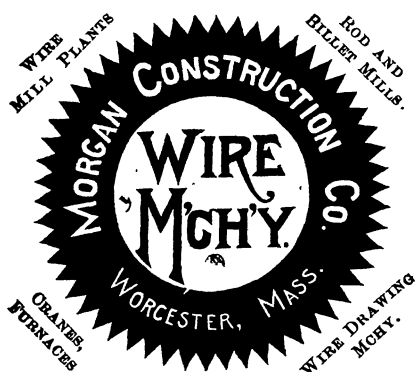
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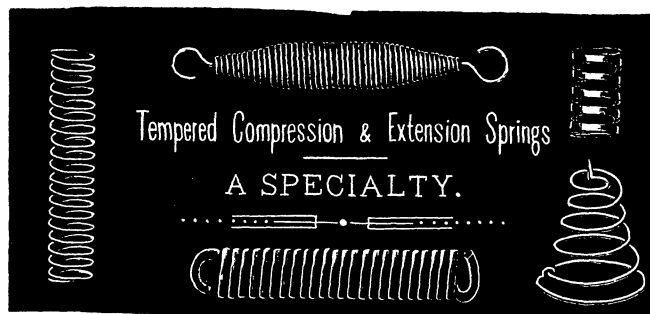
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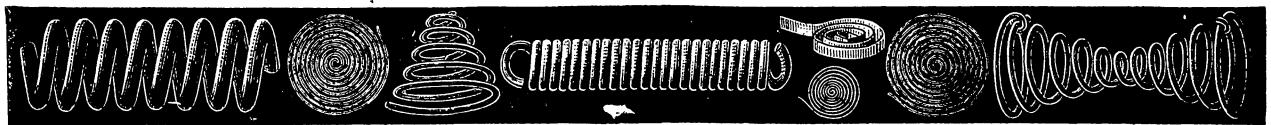
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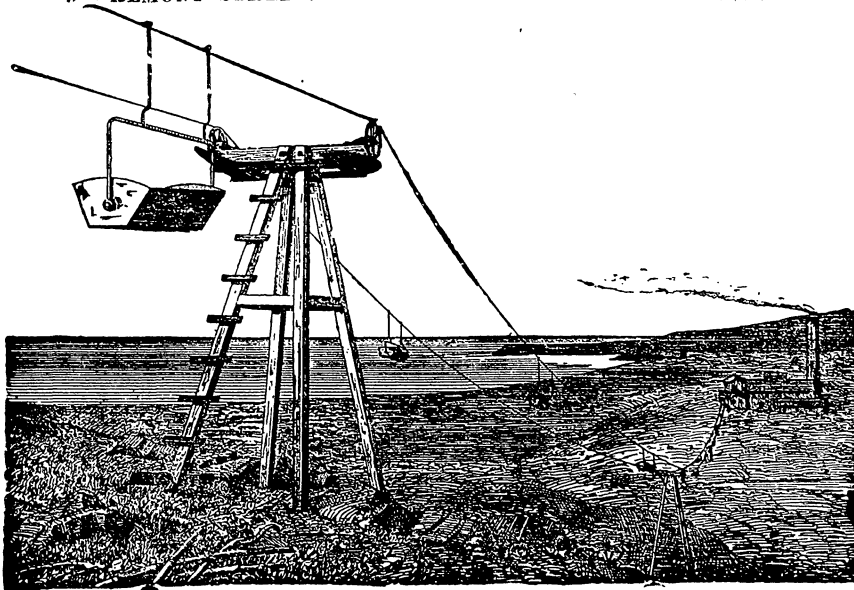
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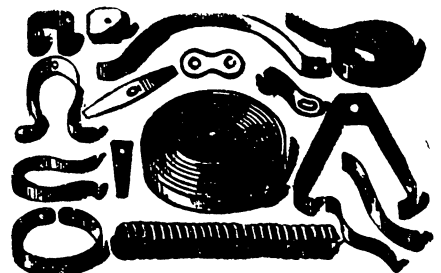
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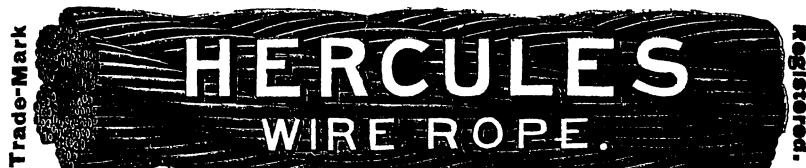
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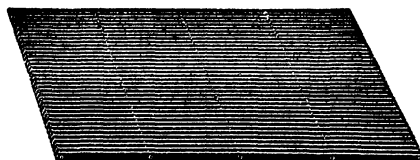
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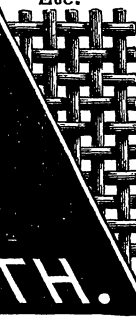
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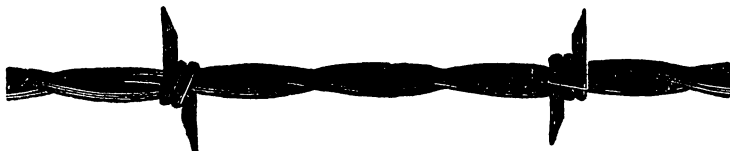
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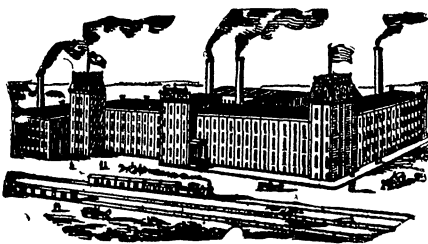


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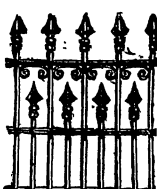
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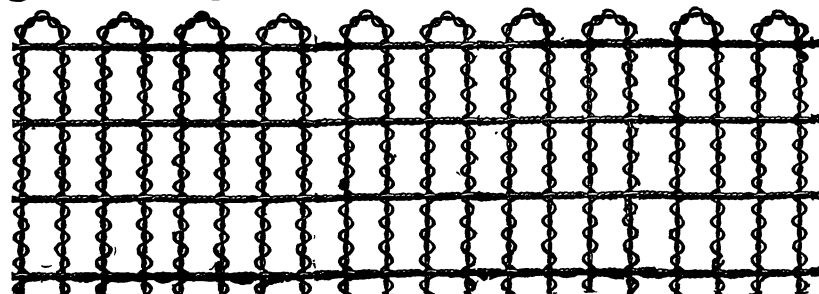
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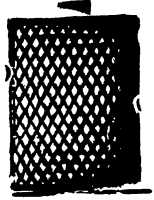


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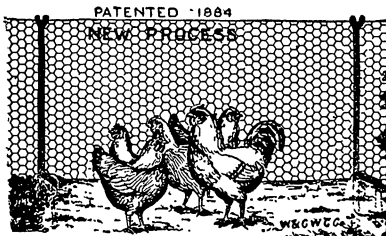
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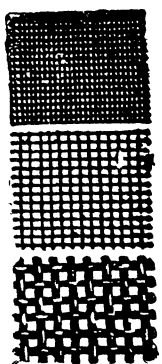
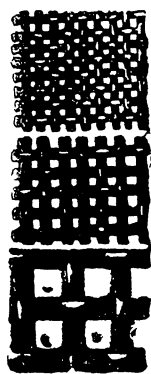
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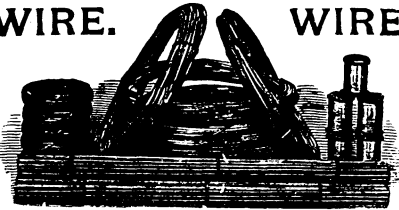
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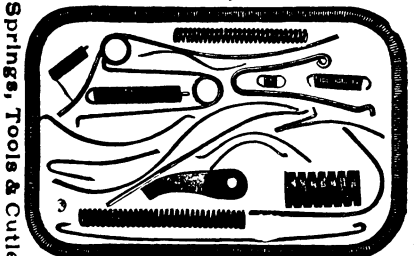
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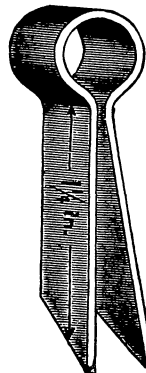
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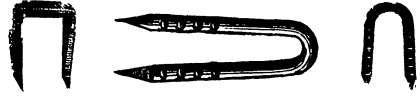
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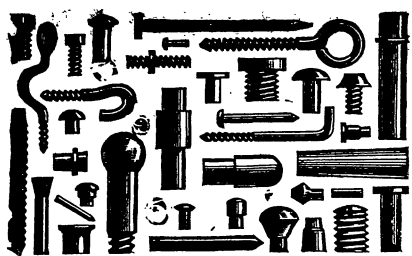
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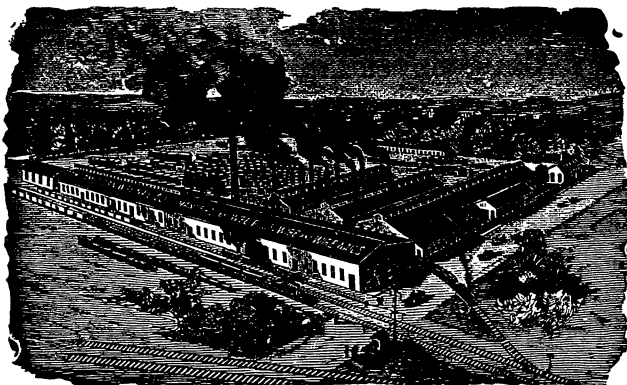
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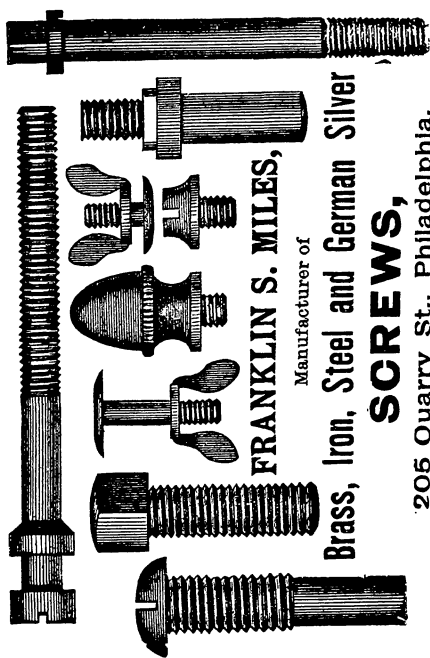
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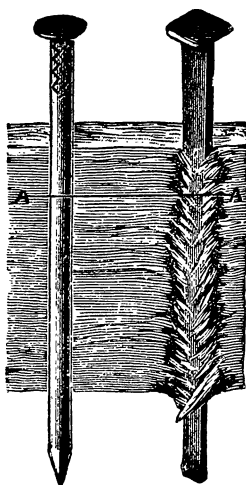
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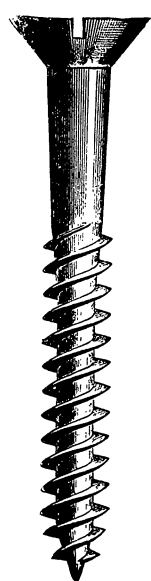
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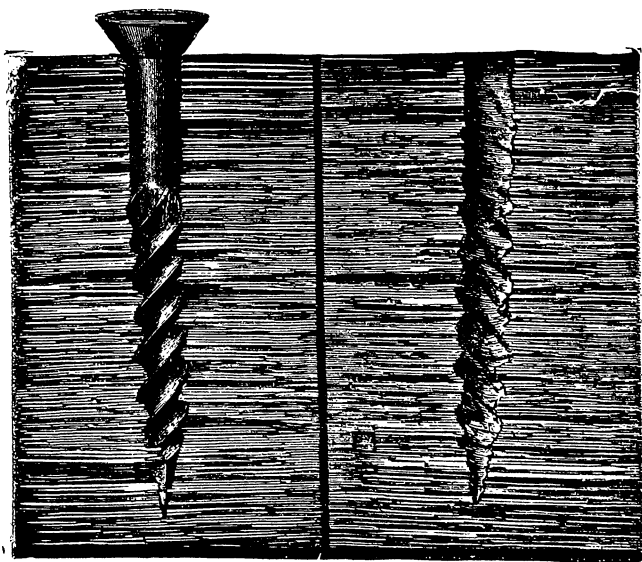
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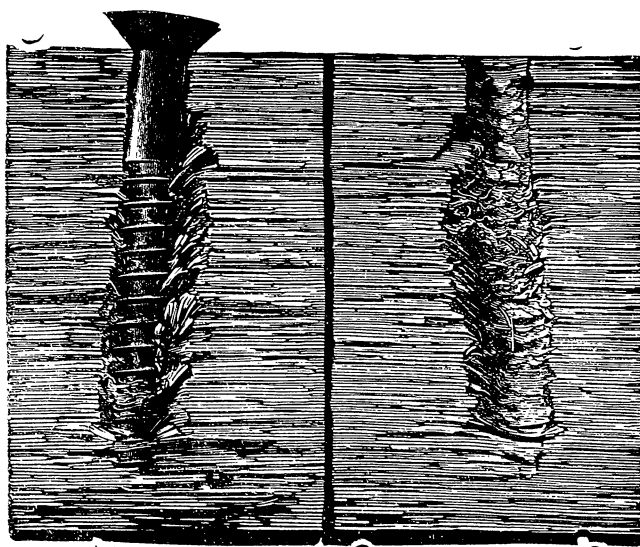
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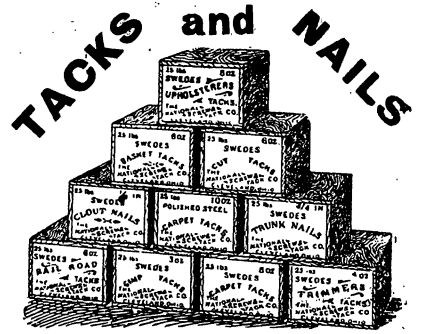
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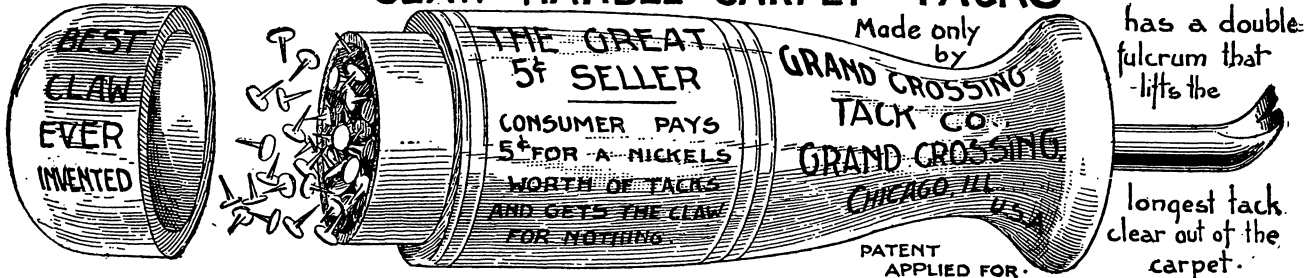
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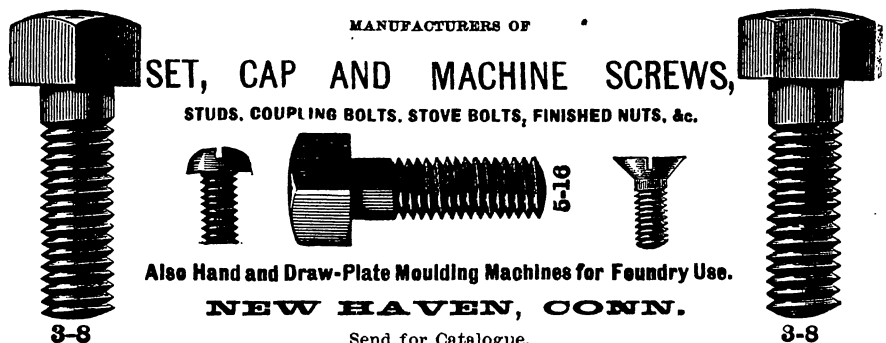
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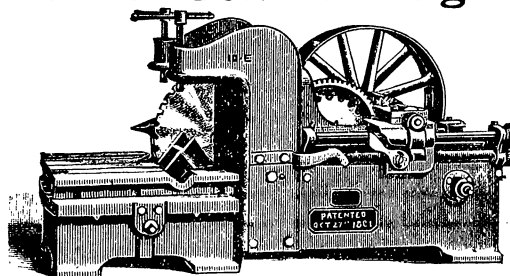
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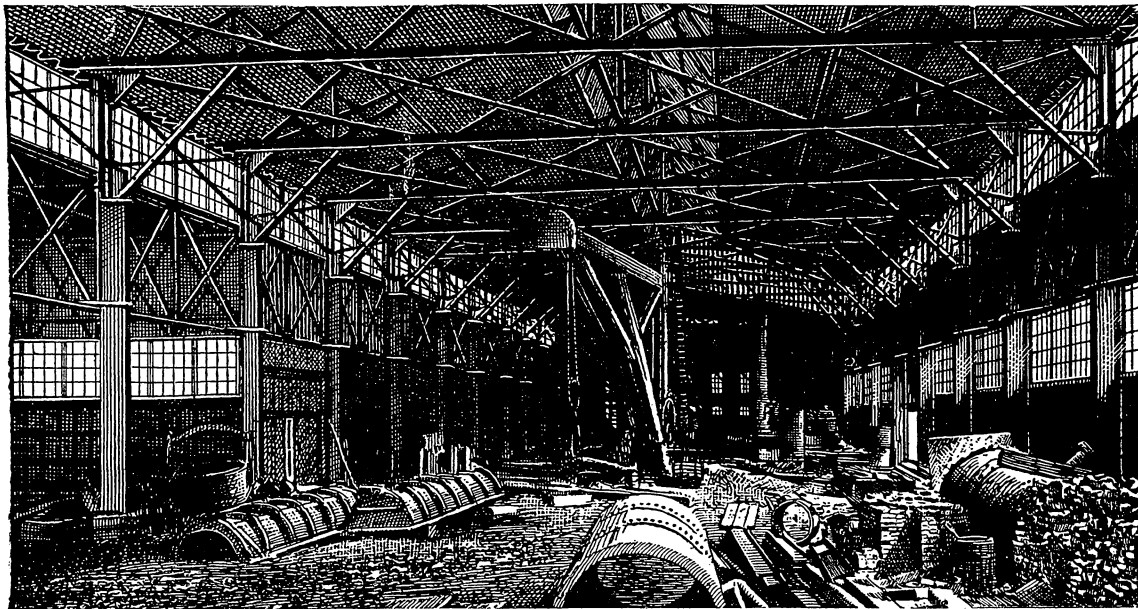
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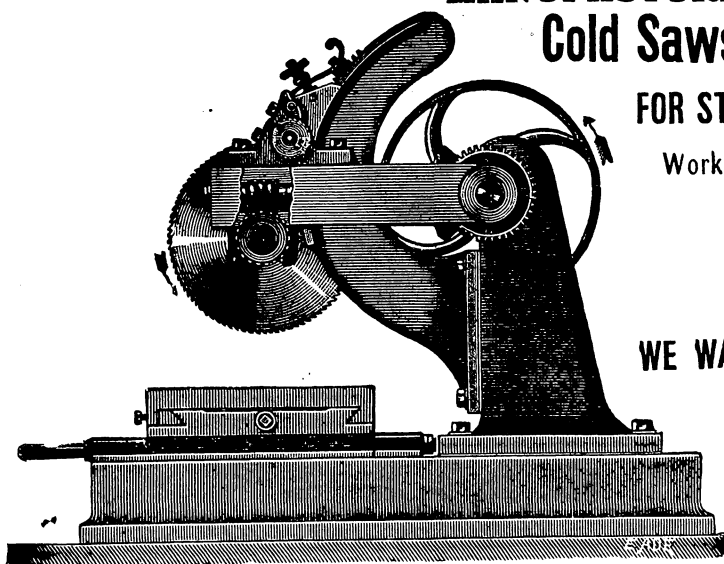
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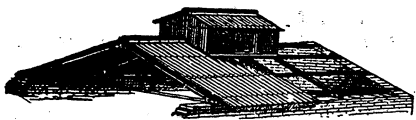
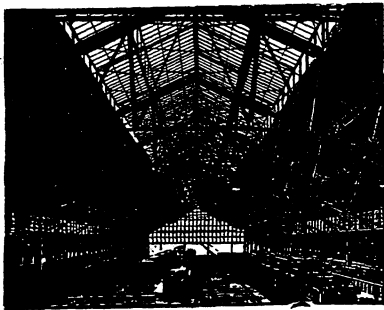
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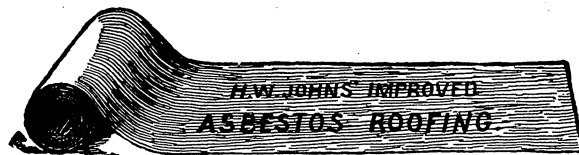
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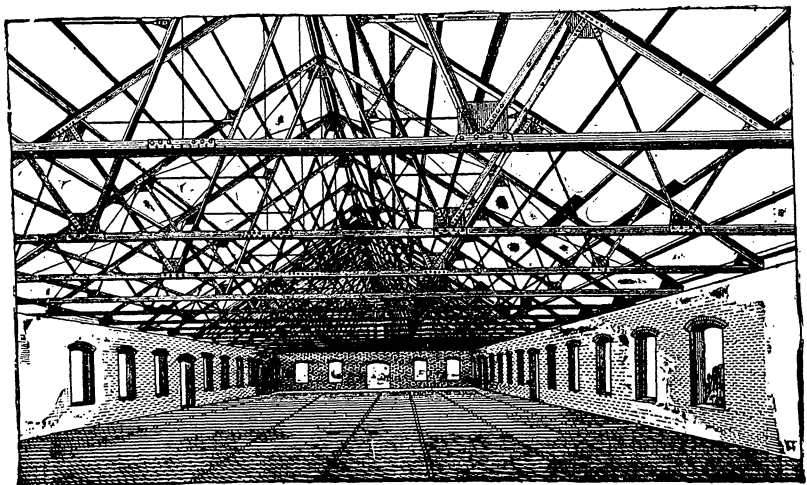
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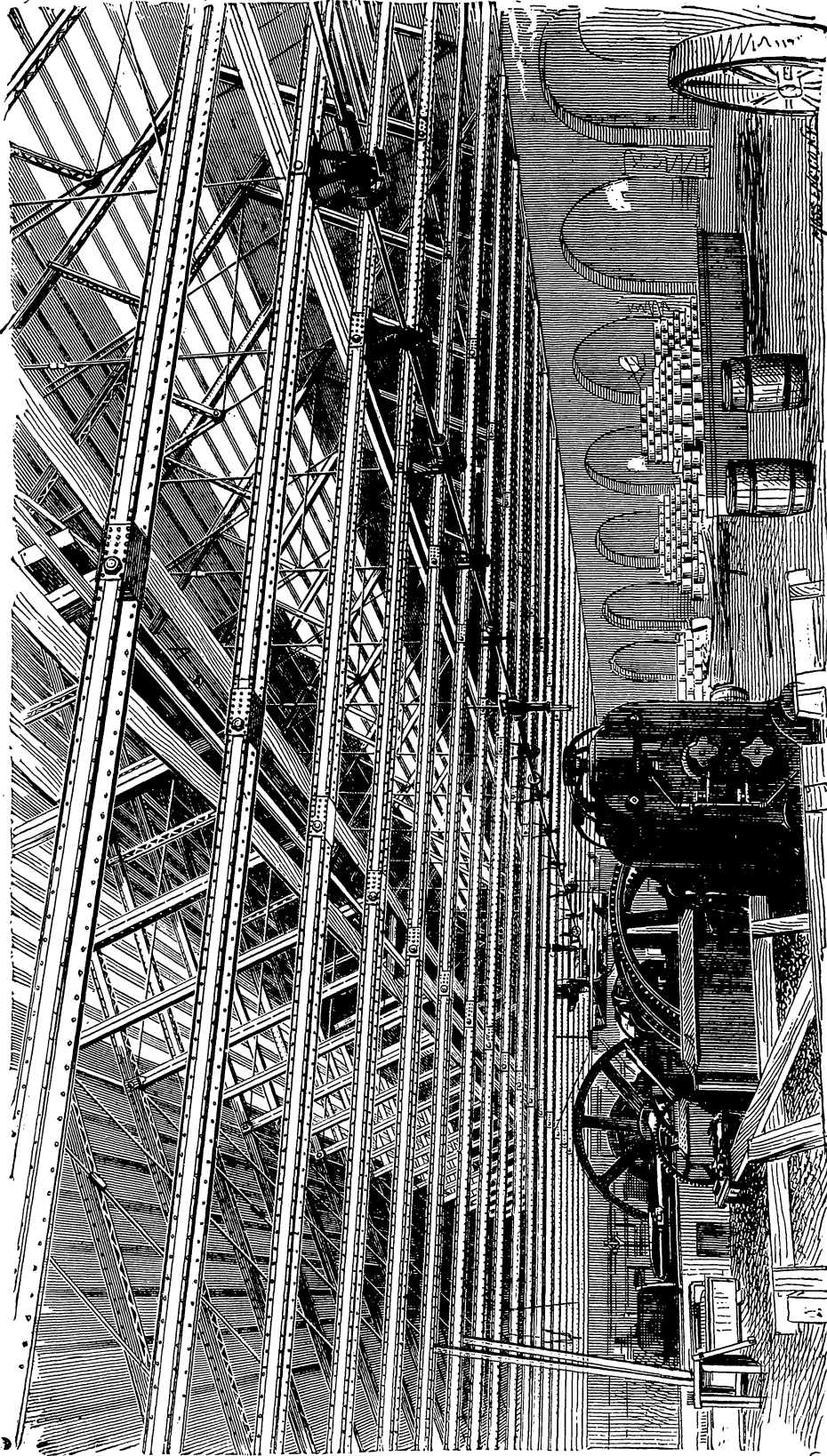
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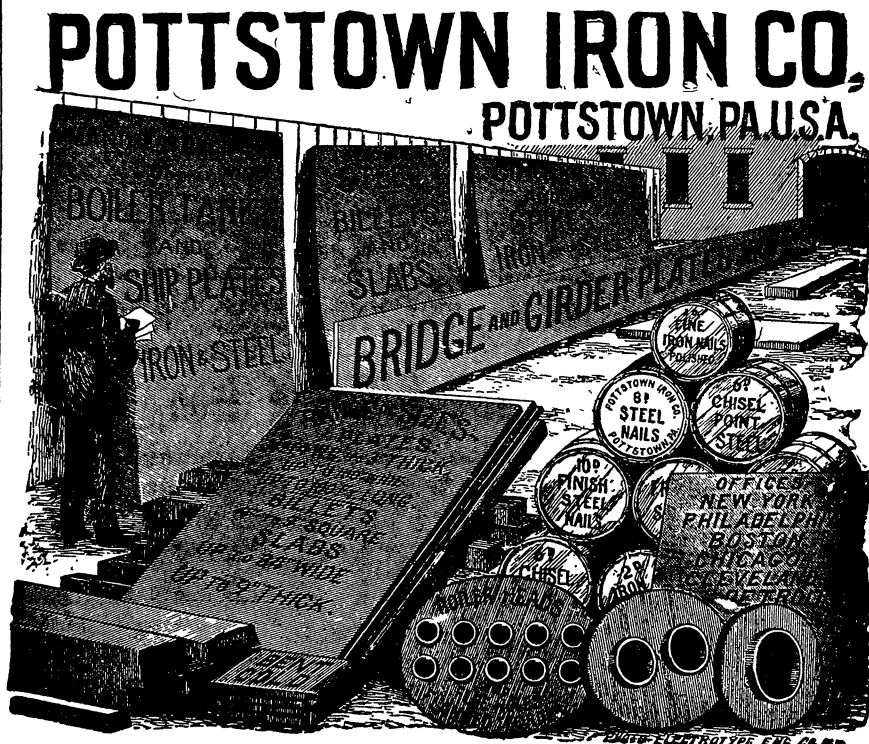
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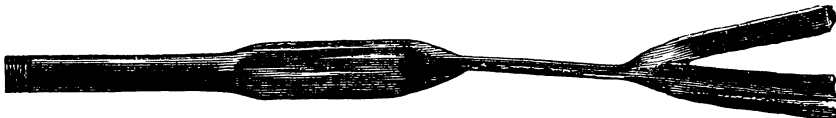
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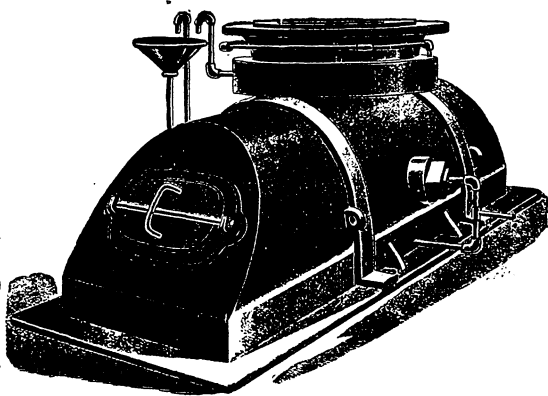
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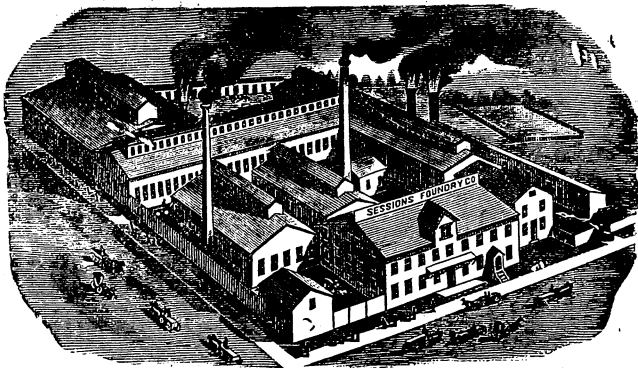
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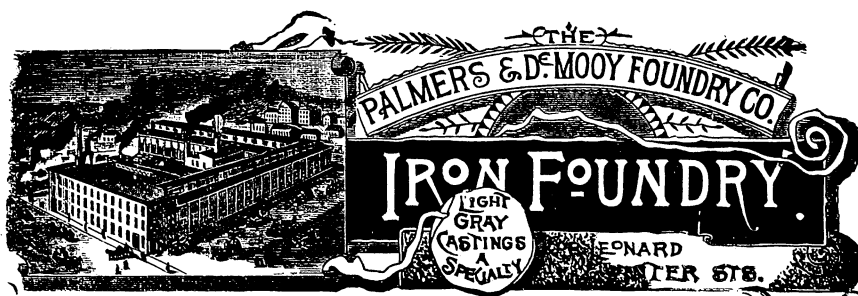
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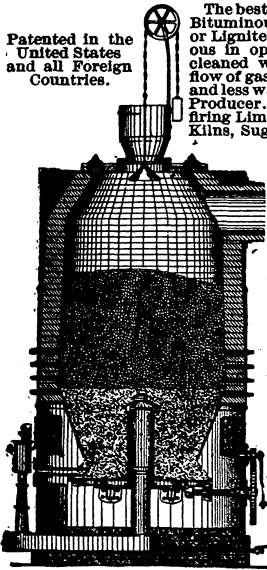
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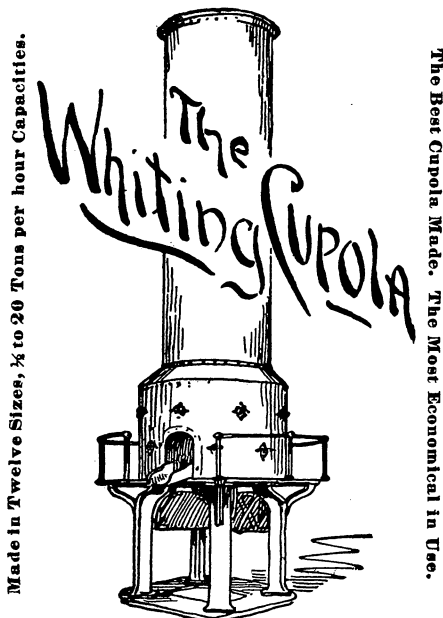
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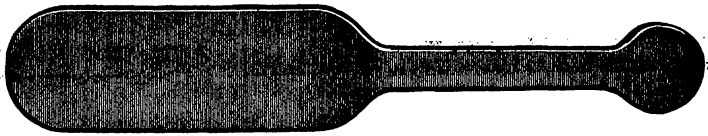
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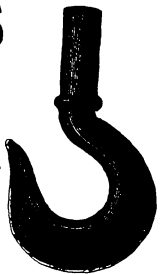
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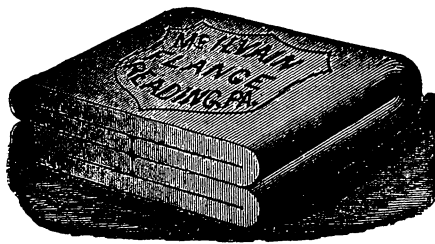
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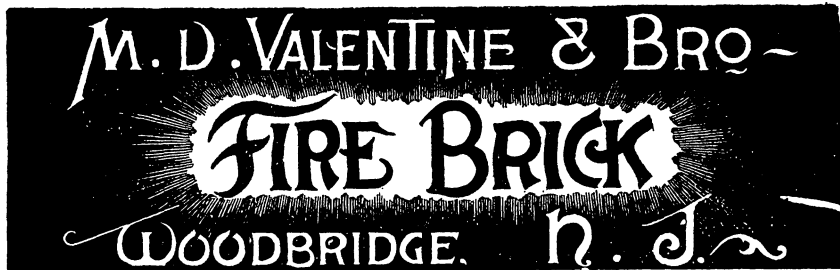
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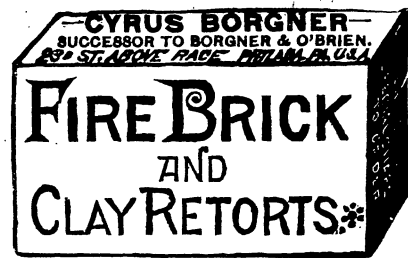
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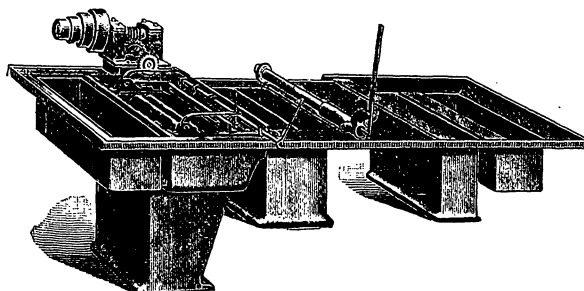
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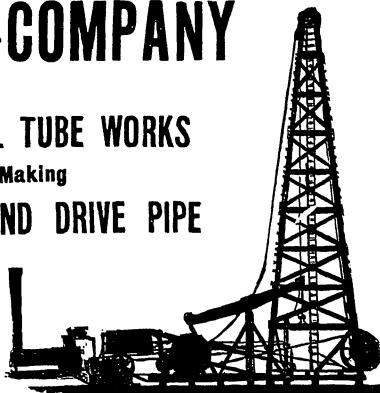
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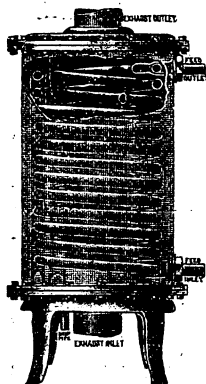
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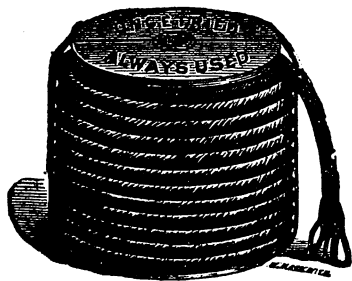
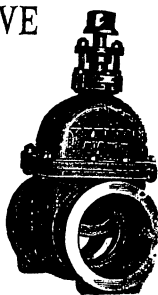
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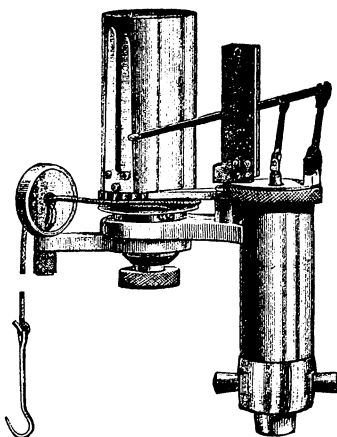
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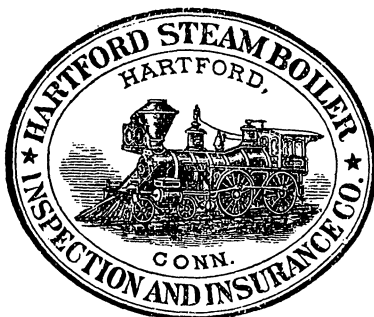
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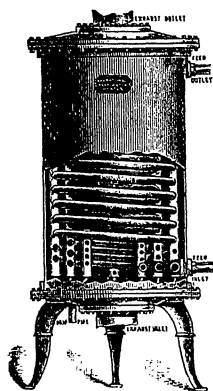


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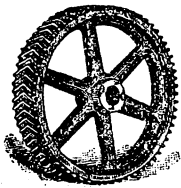
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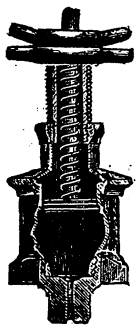
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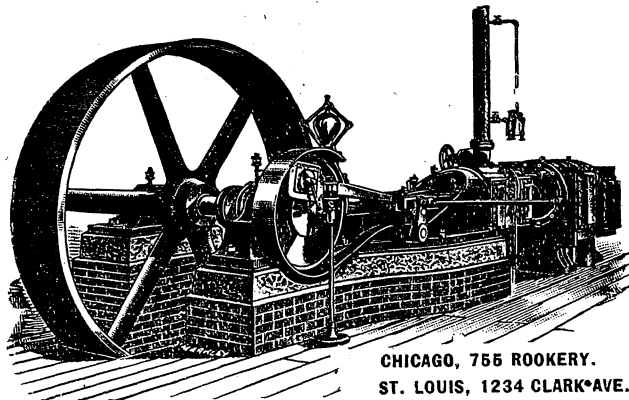
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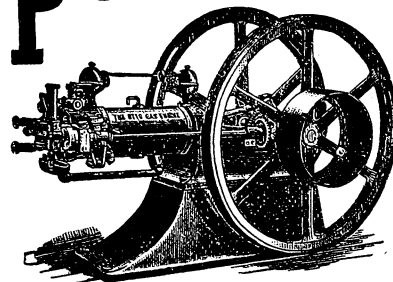
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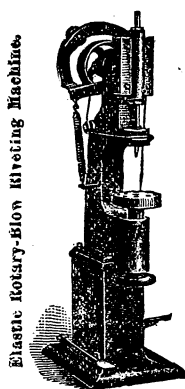
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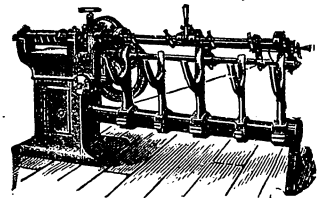
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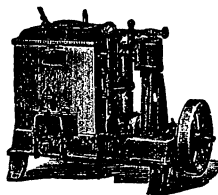
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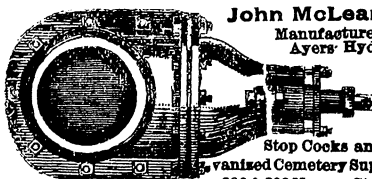
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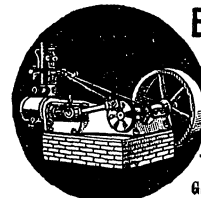
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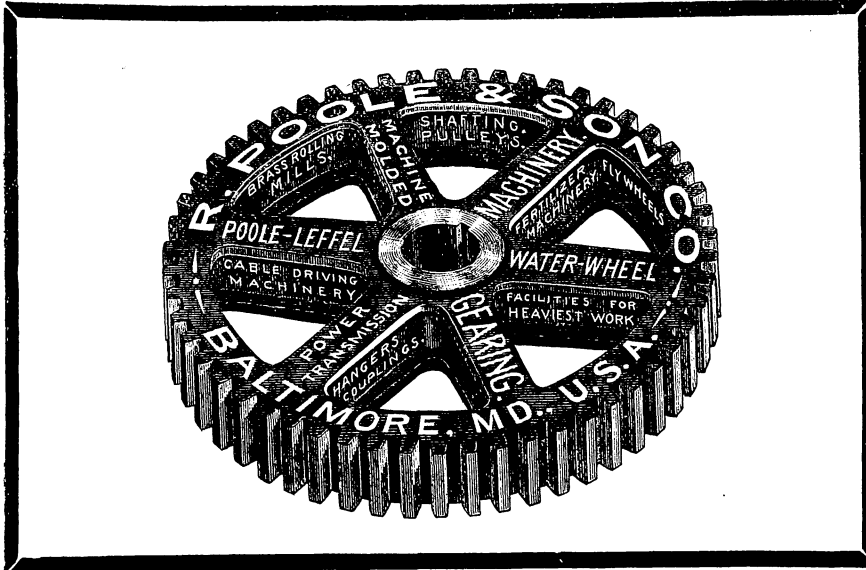
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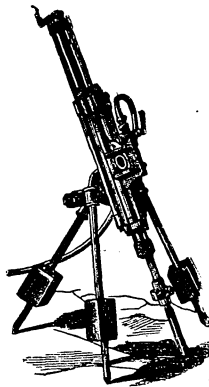
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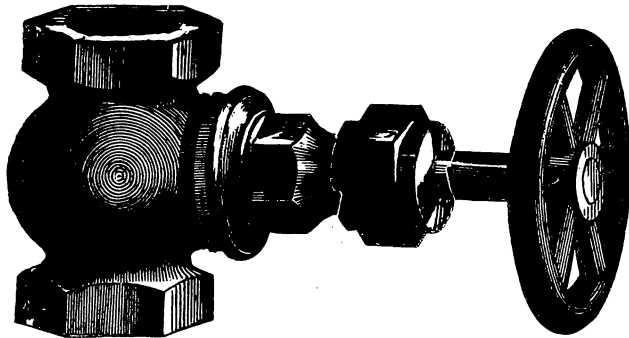
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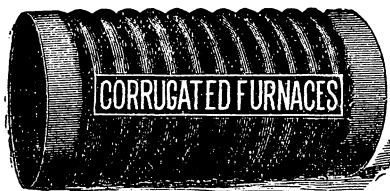
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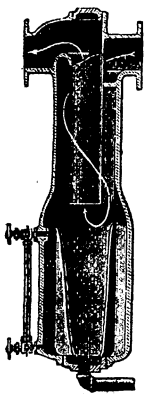
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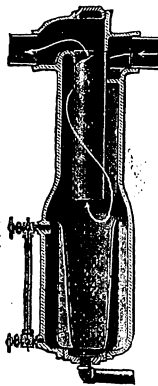


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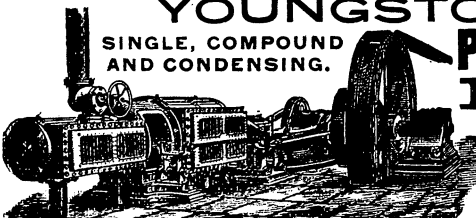
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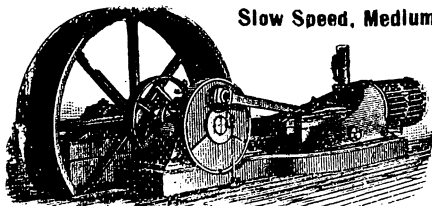
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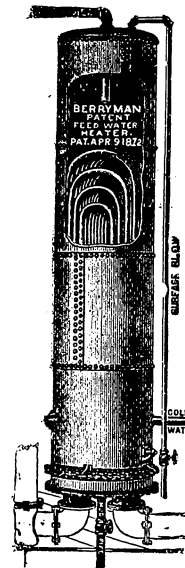


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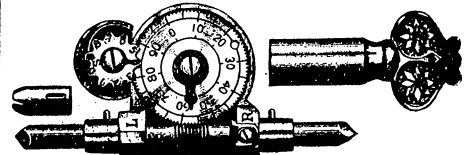
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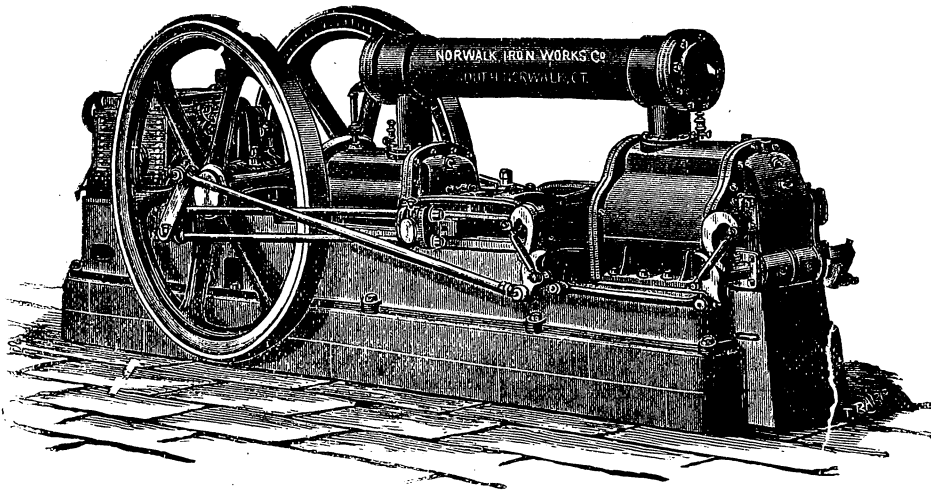
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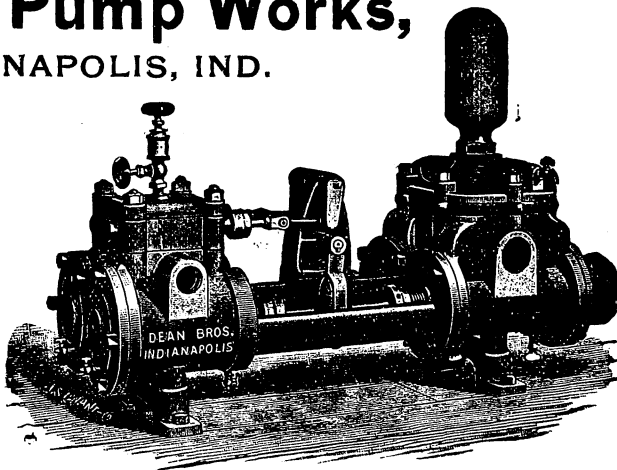
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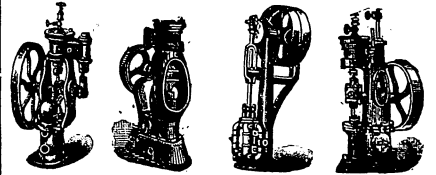


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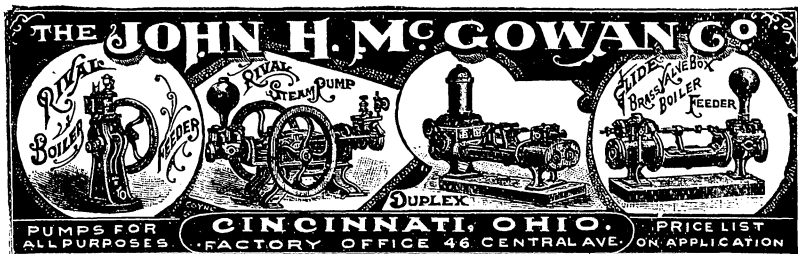


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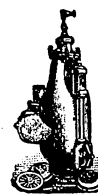
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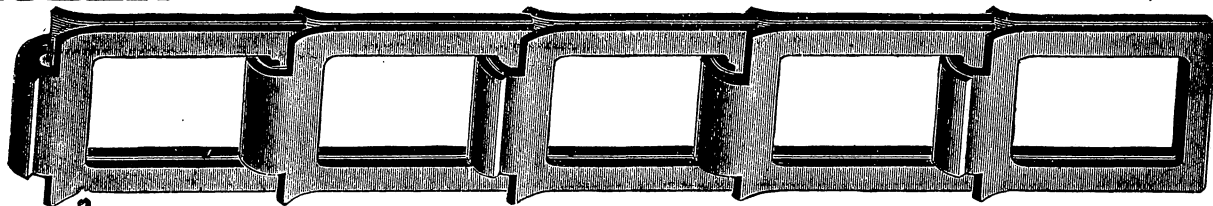
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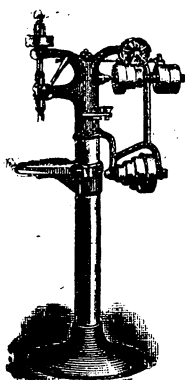
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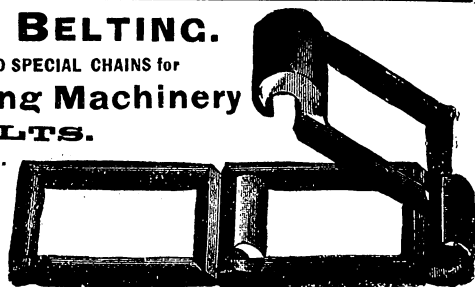
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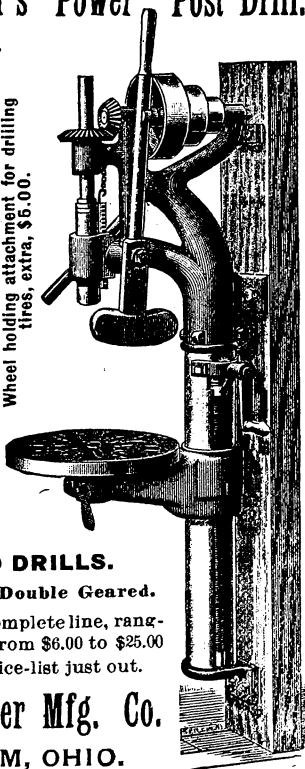


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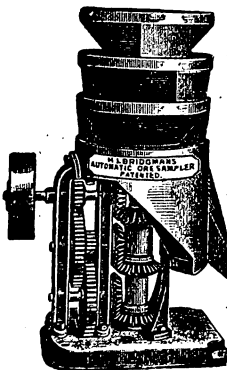


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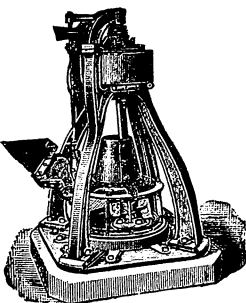
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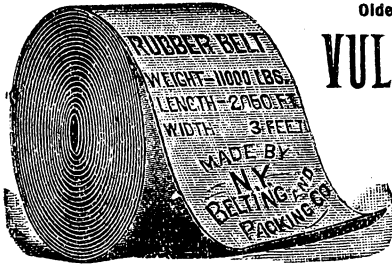
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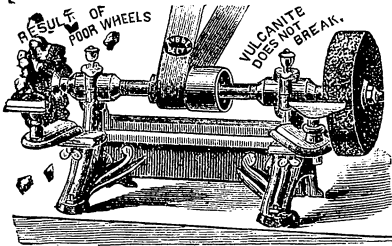
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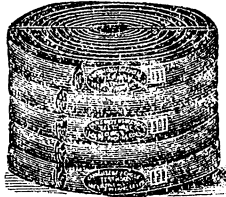
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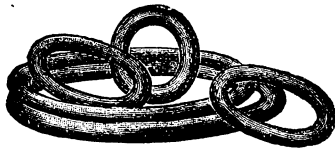
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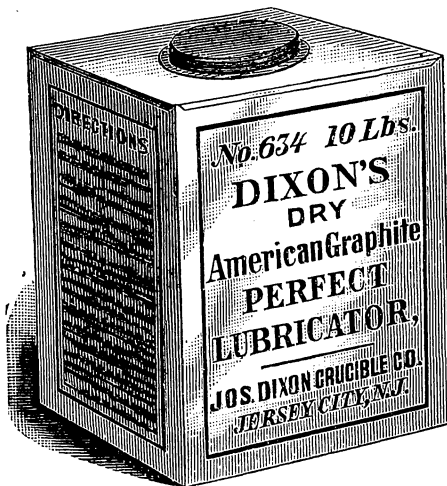
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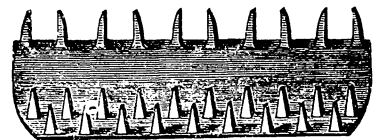
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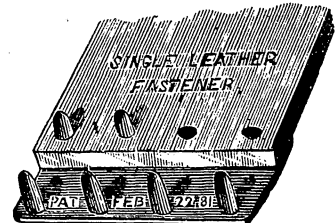
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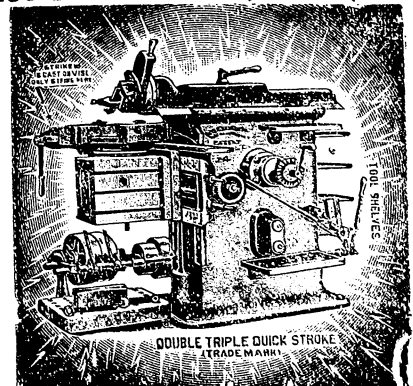
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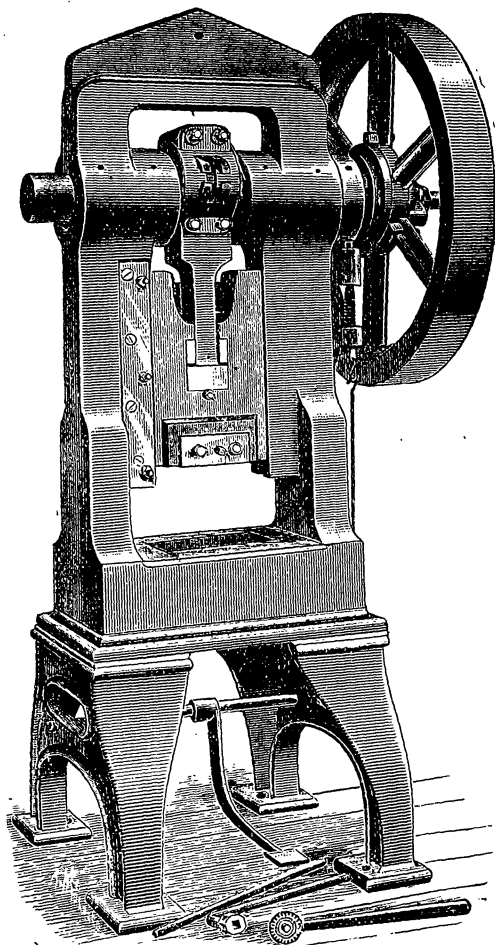
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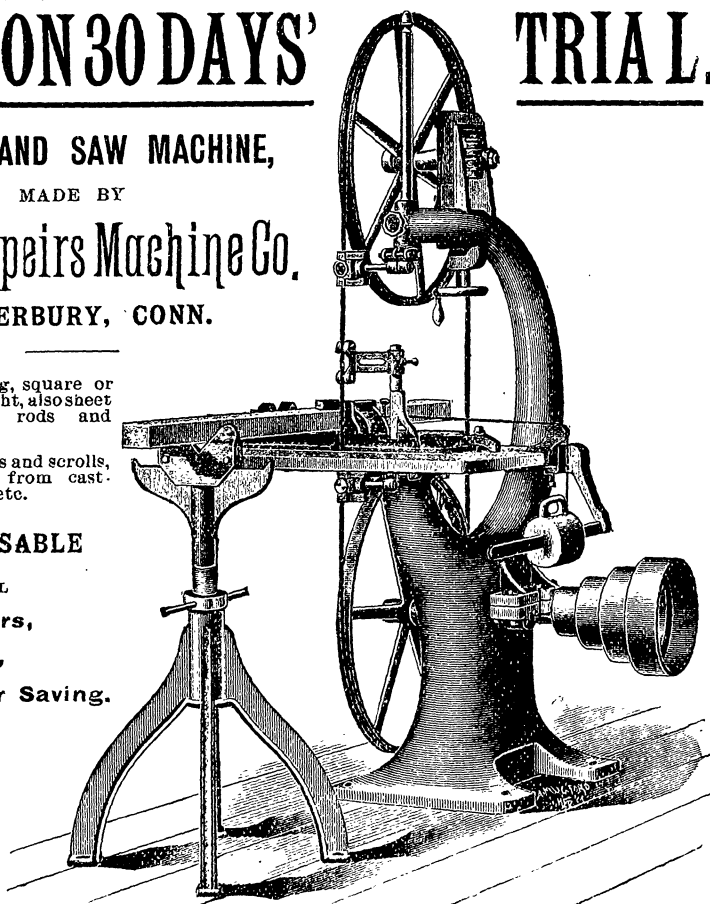
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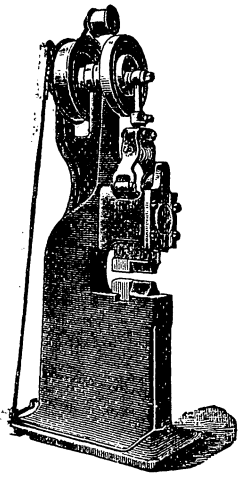
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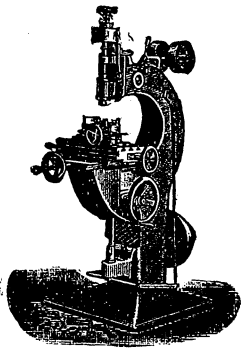
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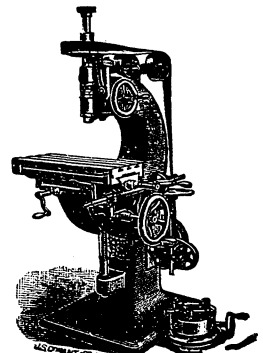
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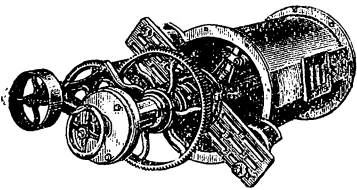


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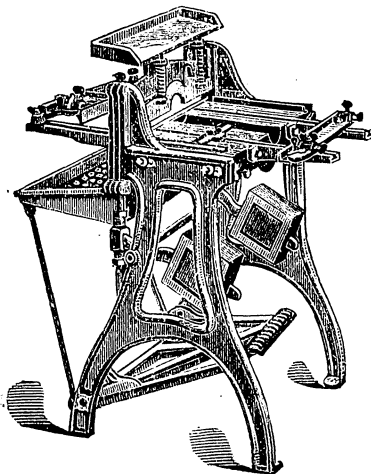
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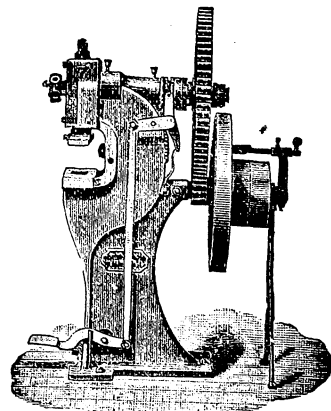
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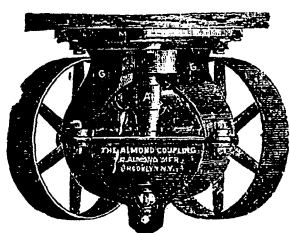
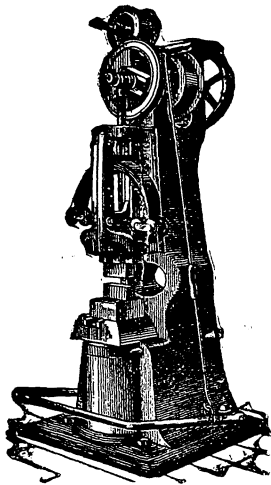
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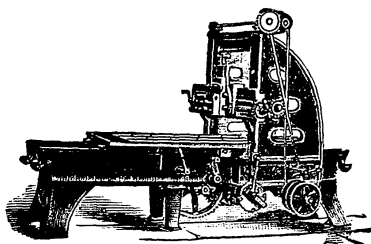
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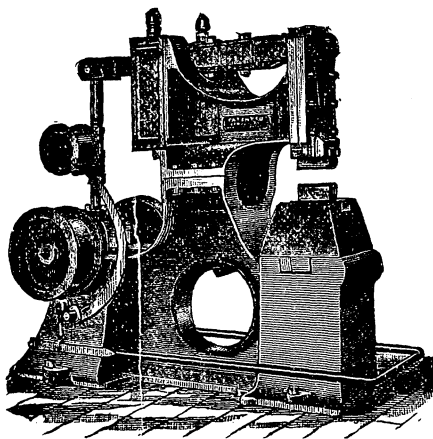
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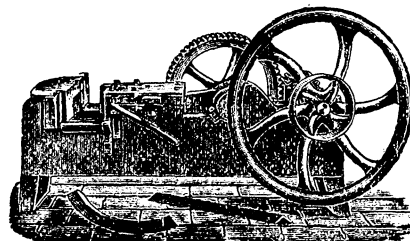
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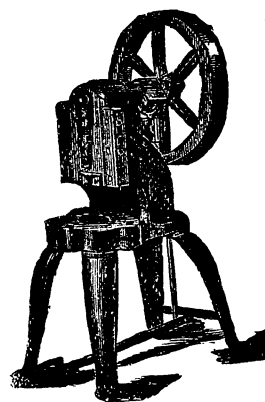
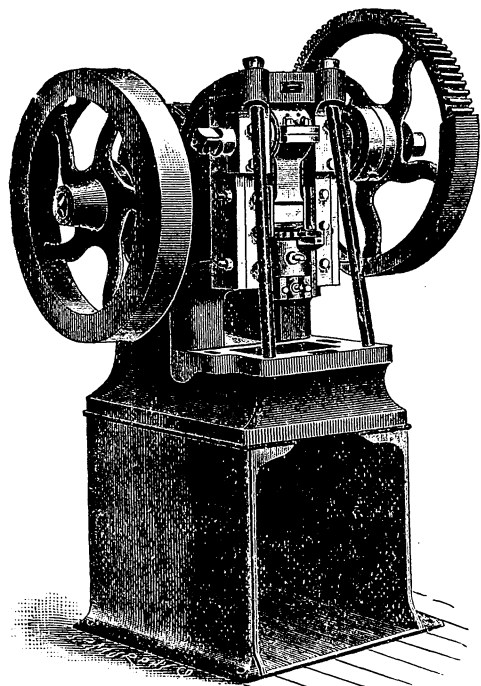
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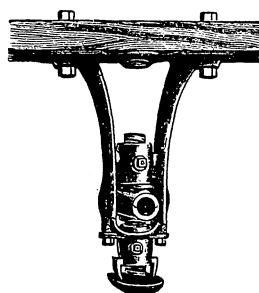
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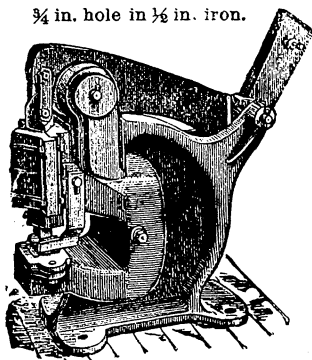
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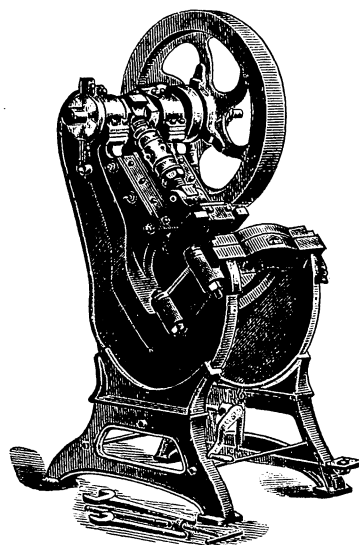
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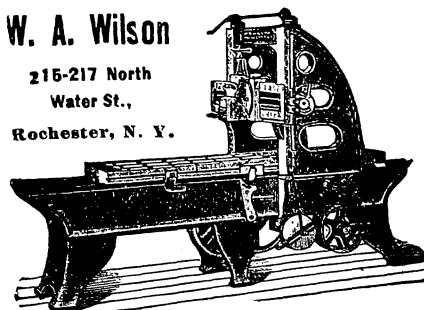
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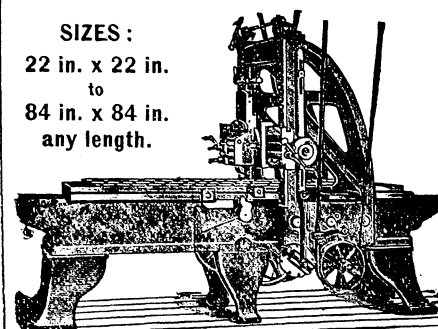
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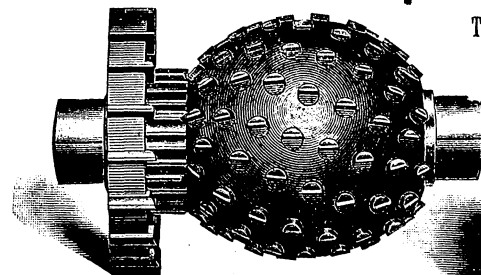
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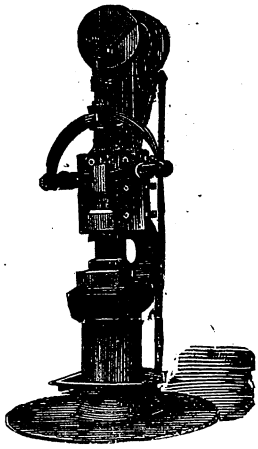
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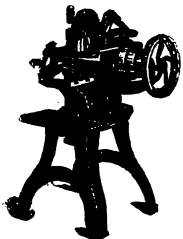


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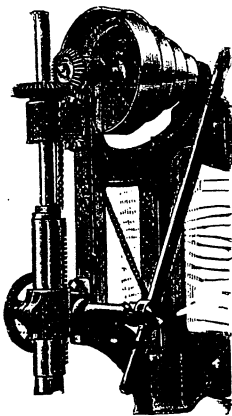
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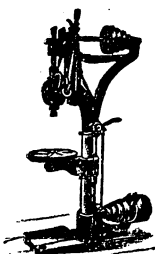
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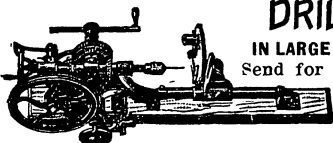


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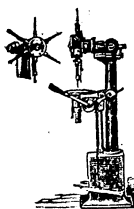
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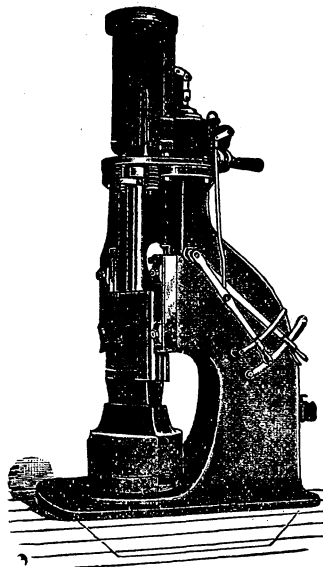
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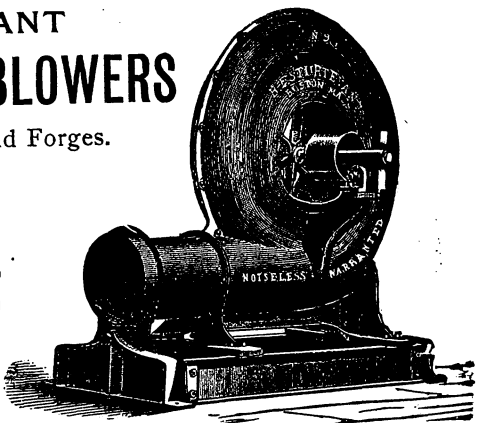
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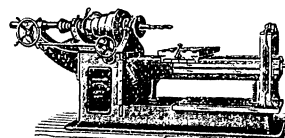
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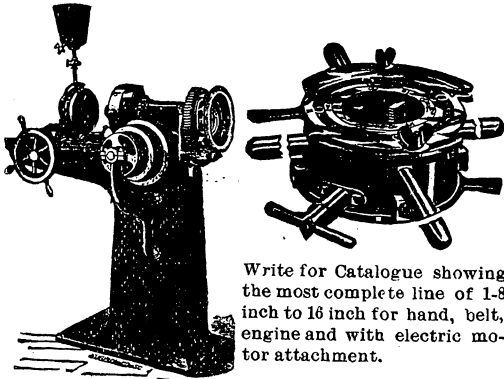
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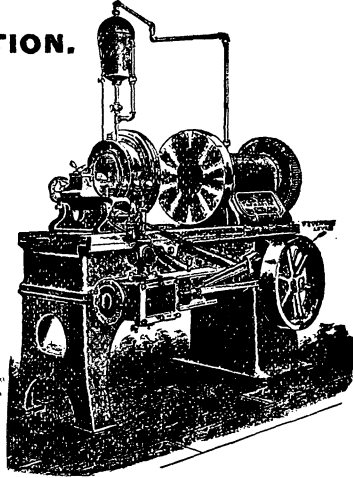
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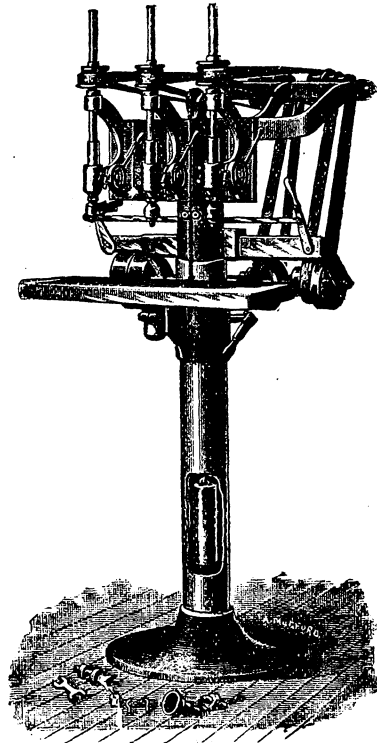


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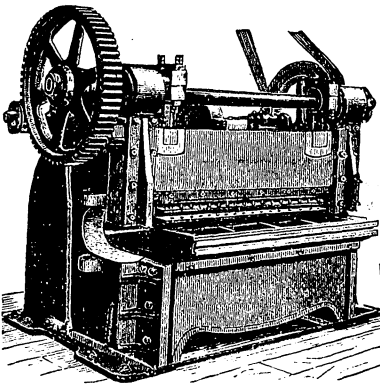
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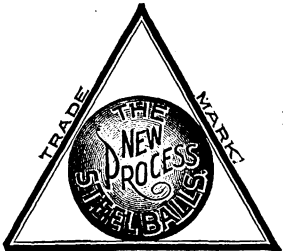
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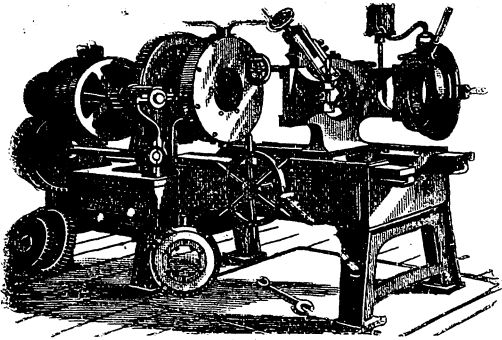
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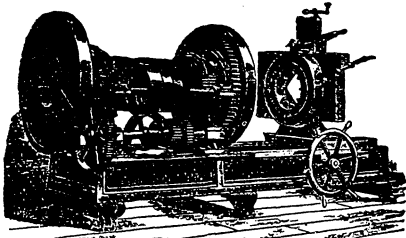
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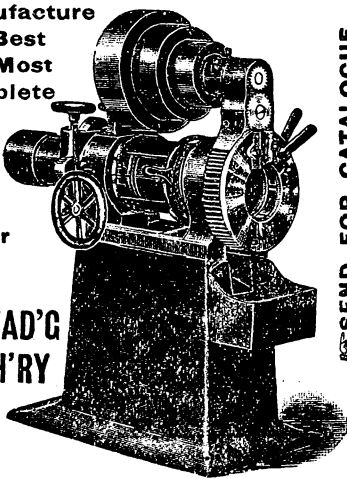
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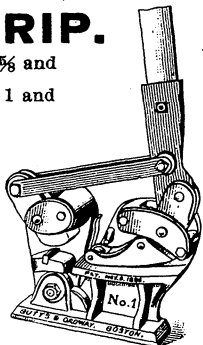
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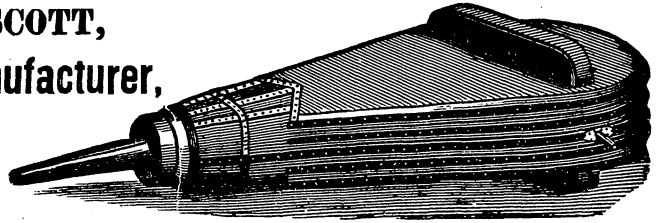
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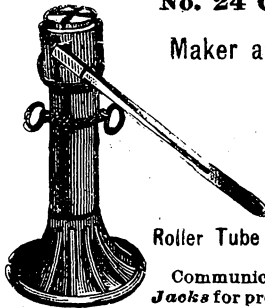
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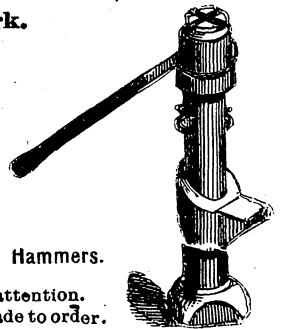
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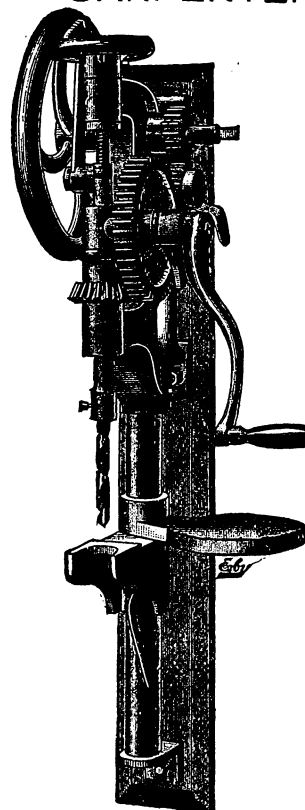
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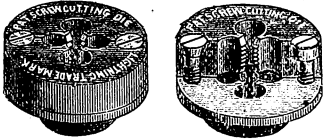
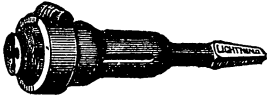


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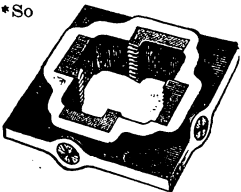
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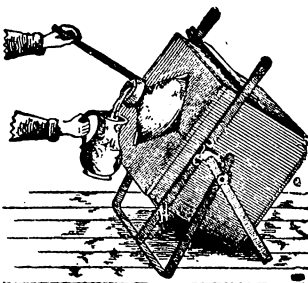
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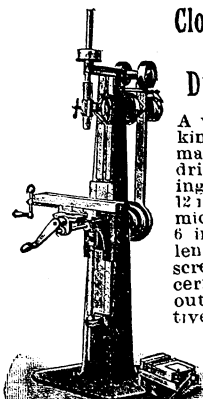
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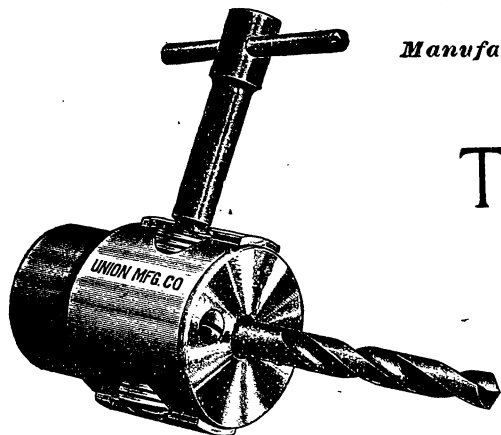
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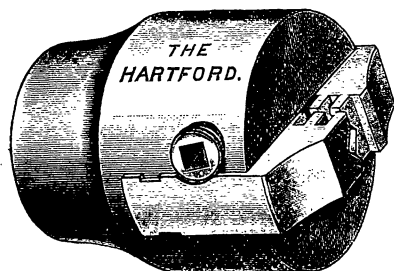
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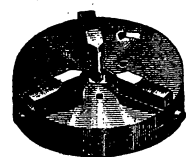
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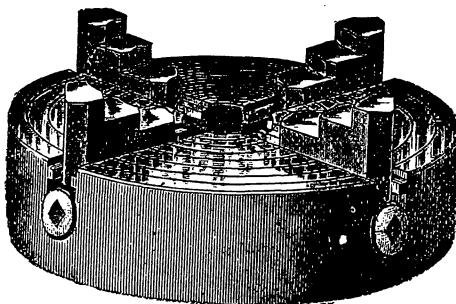
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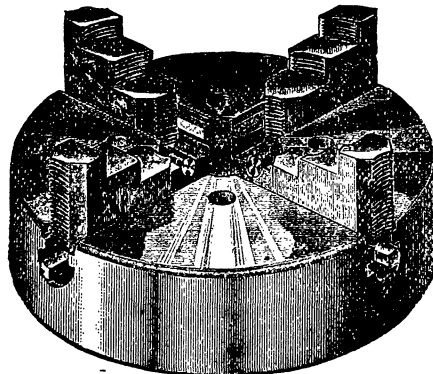


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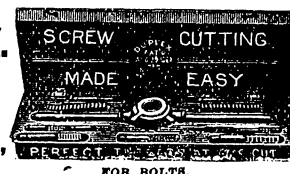


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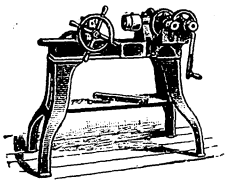
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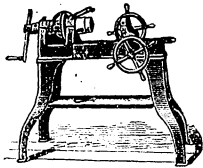


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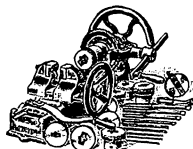
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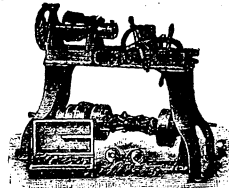
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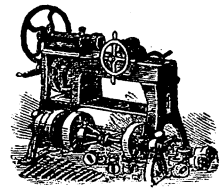
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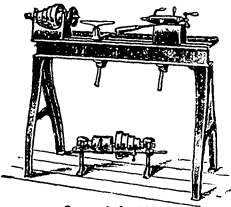
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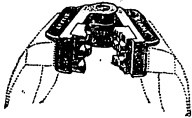
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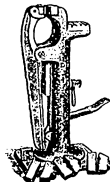
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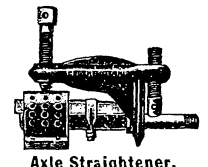
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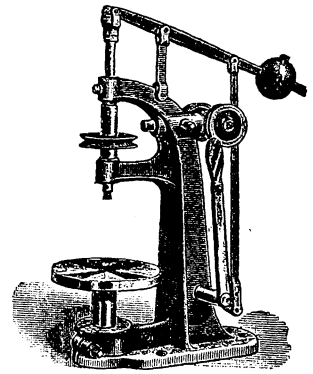
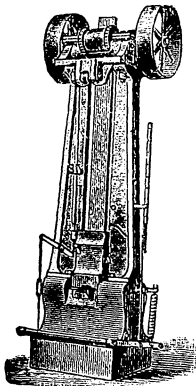
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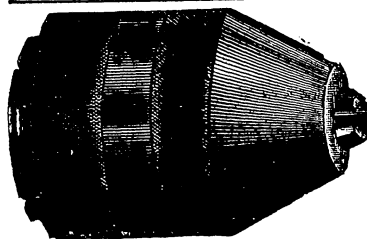


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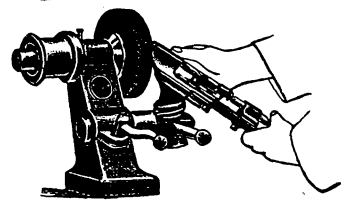
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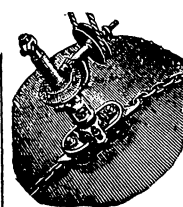
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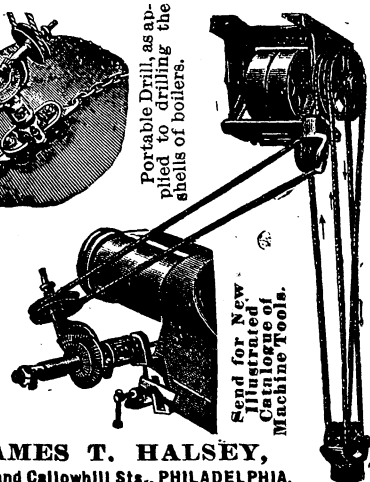
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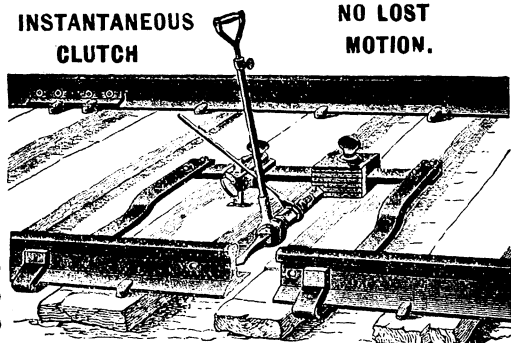
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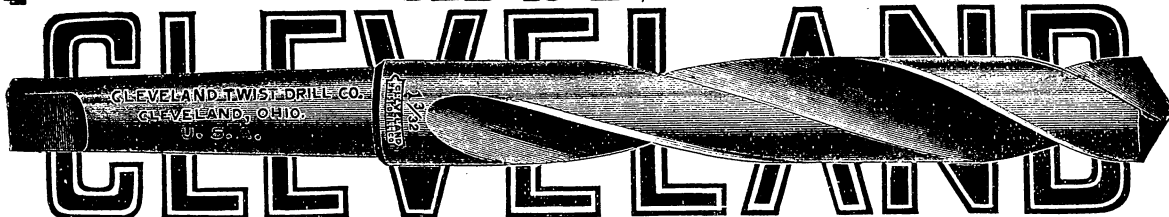
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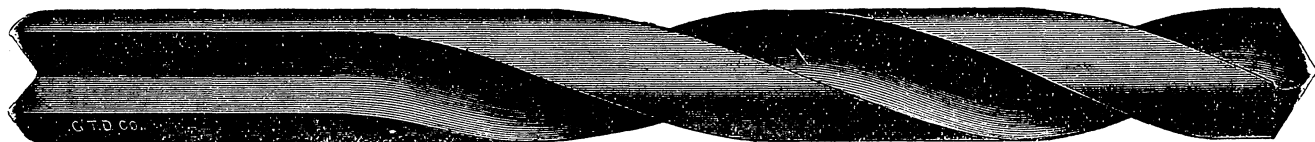
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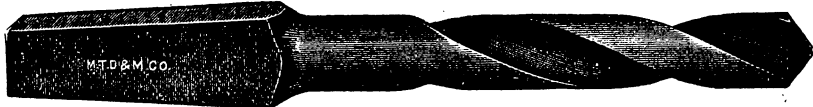
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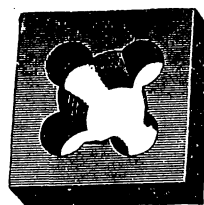
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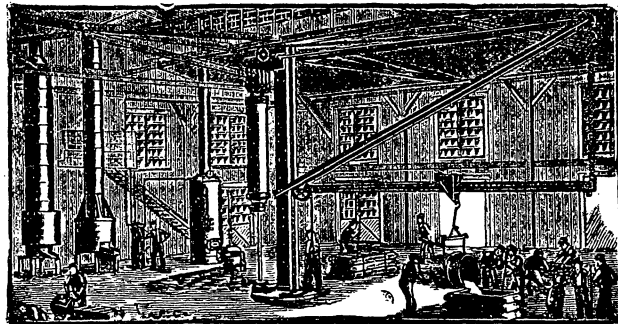
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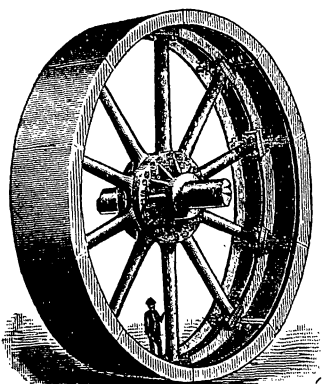
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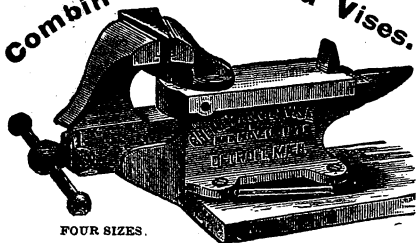
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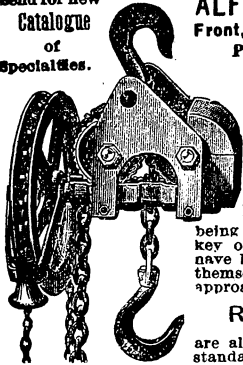
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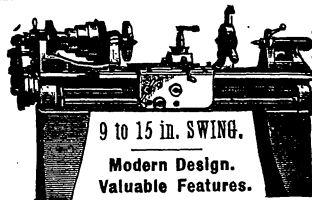
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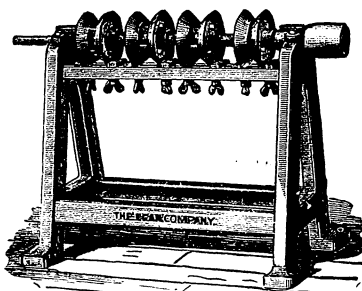


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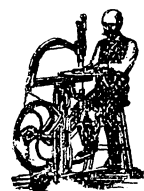
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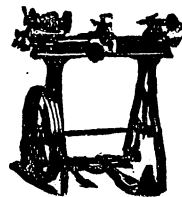
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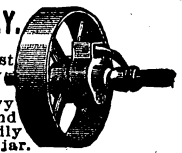
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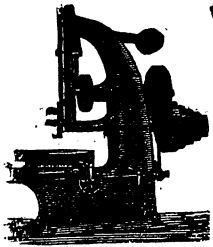
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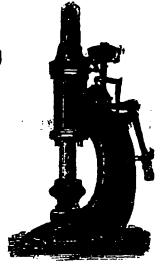


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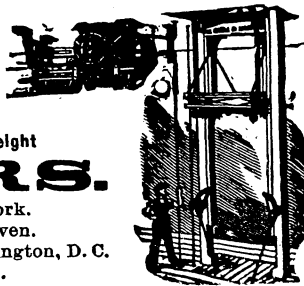
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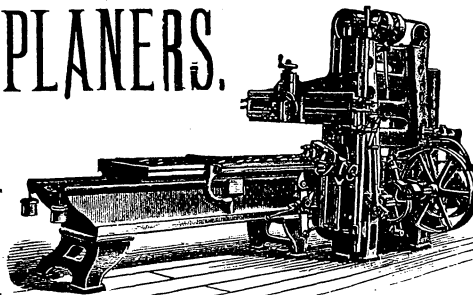
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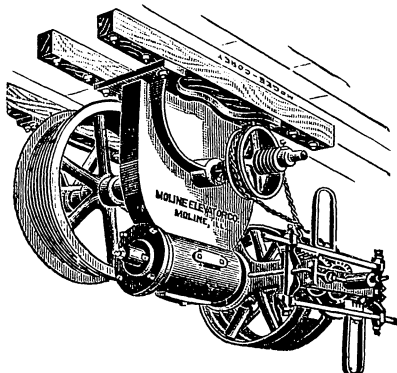
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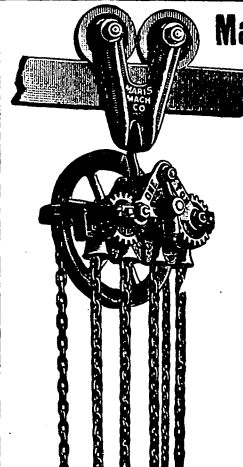
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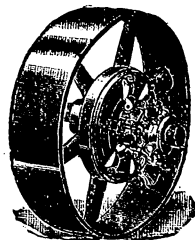
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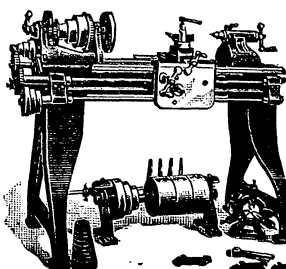
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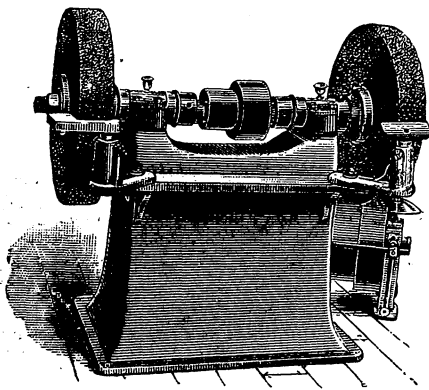
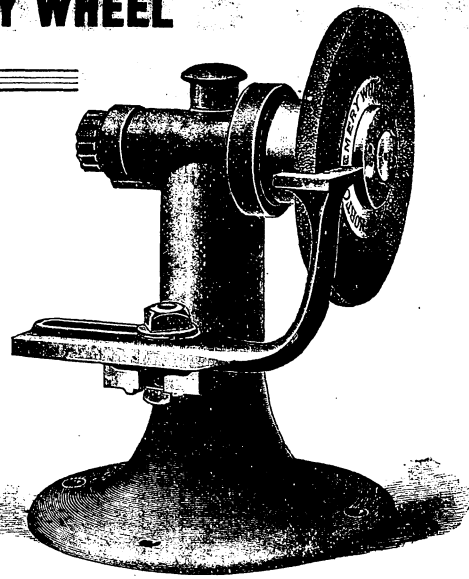
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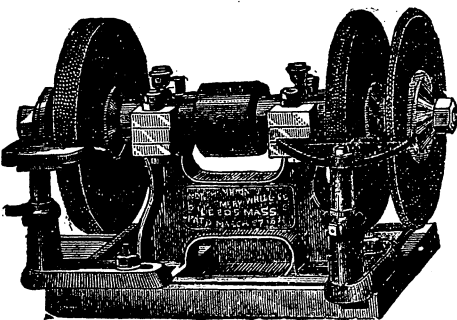
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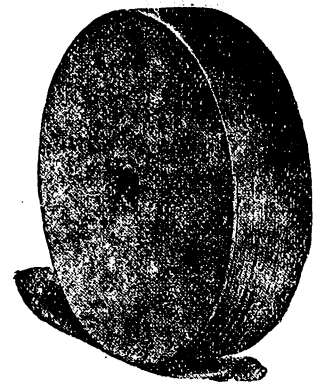
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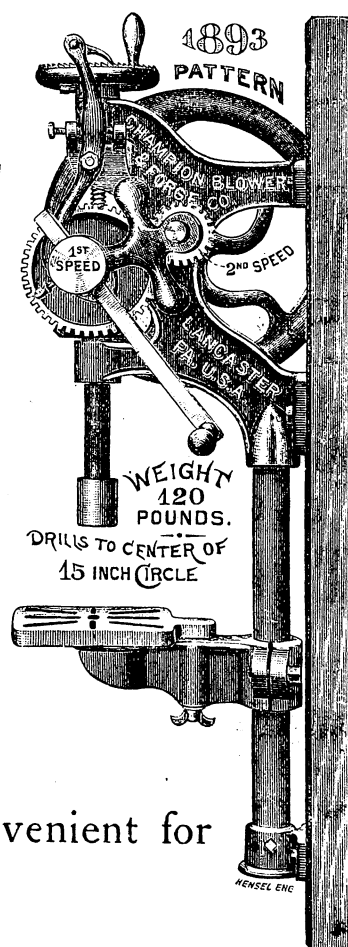
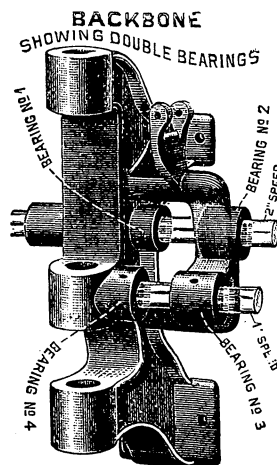
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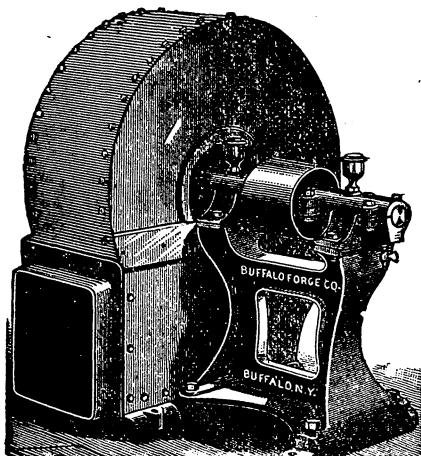
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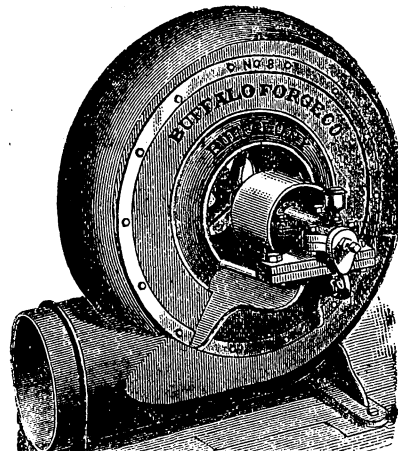
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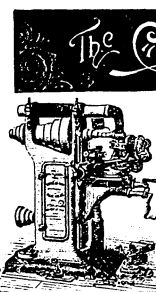
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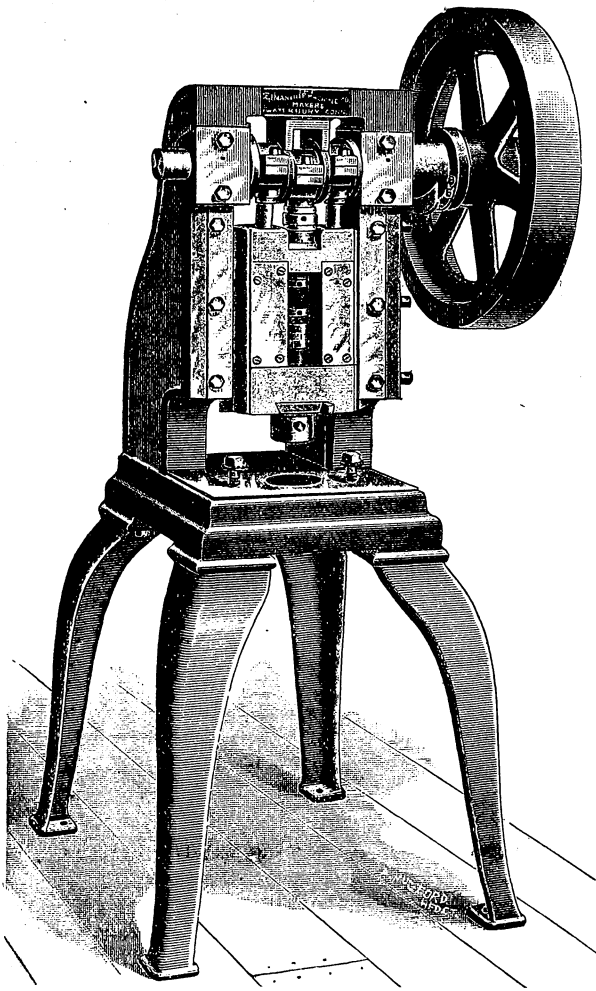
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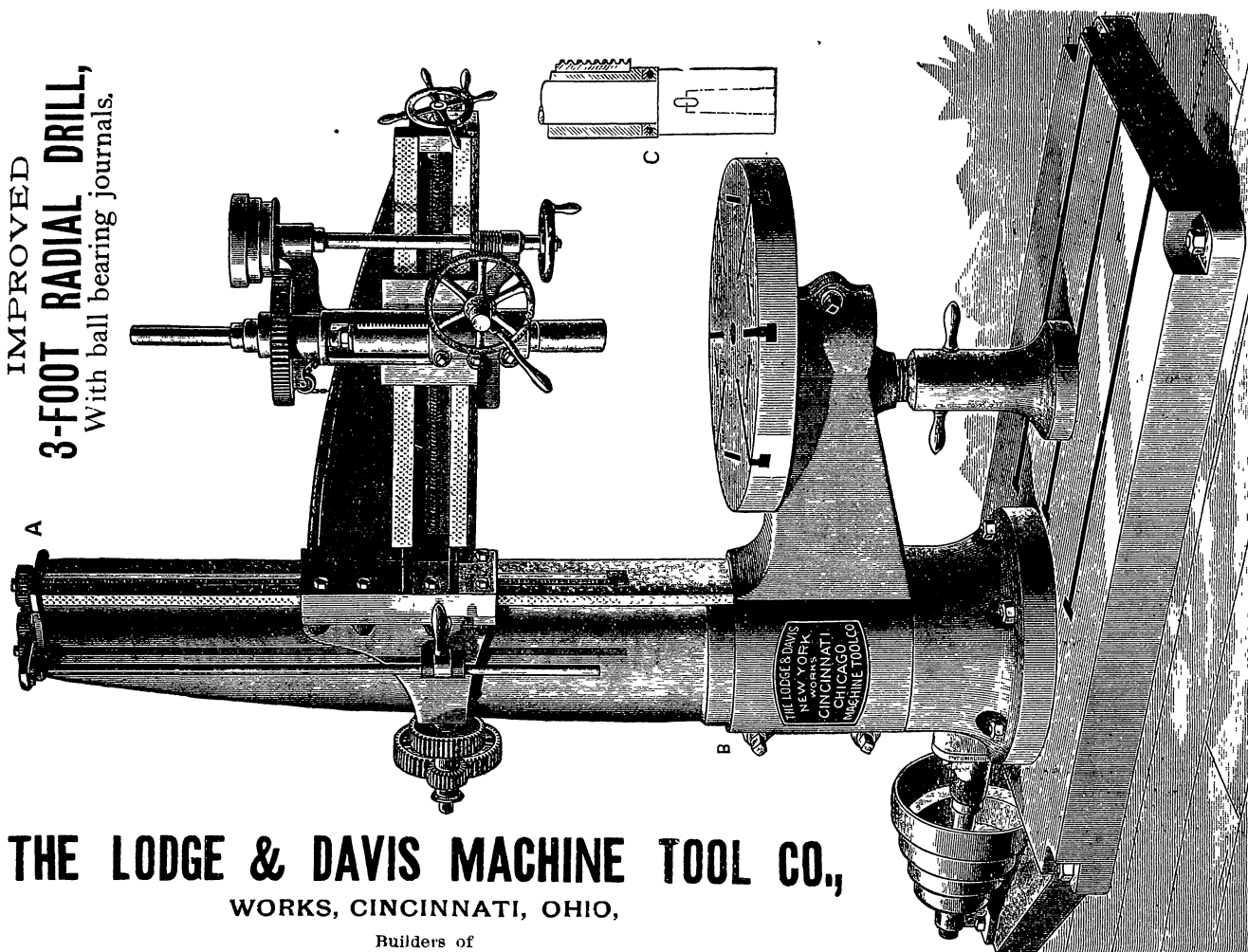
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8-in. stroke, with automatic cross, side and circular feeds and quick return, complete; modern style; first-class order. Will be sold low.

J. J. McCABE,

68 Cortlandt St., New York.

SOME BARGAINS HERE.

1 32 x 32 x 9 New Haven Planer
 1 Hendey Shaper, 15 in. stroke, imp. vise; new.
 1 30 x 30 x 9 New Haven Planer.
 1 14 x 6 Screw Cutting Engine Lathe; new.
 1 28 in. Diamond Auto. Knife Grinder, used 1 month.
 1 28 in. " " Face
 1 No. 1 " Universal Face and Angle Grinder, used 1 month.
 1 2-Spindle Garvin Drill Press, used 1 month.
 1 16-in. Crank Shaper.
 And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,** 89, 41 and 43 Central Ave., Rochester, N. Y.

PLATE MILL.

FOR SALE.

Plate Mill suitable for nail works. For particulars, &c., address

"PLATE MILL,"

Office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

FOR SALE.

Corliss Vertical Engine, cylinder 32 x 60, latest pattern, high speed; suitable for rolling mill or electric light work. Address
 NATHAN BENHAM, Hartford, Conn.

CORLISS,

Wright, Porter-Allen, Buckeye and Slide
Valve Engines, Boilers, Pumps, &c

230 x 72 Corliss Engines. 111 x 30 Buckeye Engine.
130 x 60 Corliss Engine. 114 x 28 Buckeye Engine.
126 x 60 Corliss Engine. 122 x 48 Buckeye Engine.
126 x 48 Corliss Engine. 114 x 30 Porter-Allen Eng.
123 x 36 Corliss Engine. 111 x 16 Porter-Allen Eng.
118 x 36 Corliss Engine. 1 9/16 x 12 Armstrong &
114 x 42 Corliss Engine. Sims Eng't.
114 x 31 Corliss Engine. 1 Valley Mch. Co. 8 x 10
1 pair 26 x 40 Corliss Eng. Engine.
1 1/2 ft. x 1 1/2 ft. Fan Blower. 2 Cum'm'r Auto. Engines,
110 x 6 x 12 Blake Pump. 1 60 H.-P. Westinghouse
2 Blake Duplex Pumps, 6 Engine.
x 4 x 7. 1 1/2 A. P. Westinghouse
1 Blake Pump, No. 000. Engine.
1 12 x 7 x 12 Niagara Pump. 123 x 48 Slide Valve Eng.
1 8 x 8 x 13 Cameron Pump. 118 x 36 Slide Valve Eng.
2 Centrifugal Pumps, small 117 x 42 Slide Valve Eng.
size. 116 x 34 Slide Valve Eng.
1 No. 2 Guild & Garrison 114 x 18 Slide Valve Eng.
Pump. 113 x 24 Slide Valve Eng.
220 x 48 Wright Engines. 111 x 10 Slide Valve Eng.
1 Deepwell Pump, 7 x 10 cylinder.
1 Bogardus Mill and 1 Simpson Crusher.
180 in. Co. n Mill and 1 Emery Grinder.
1 Automatic Sawdust Feeder.
1 Corliss Jet Condenser, 600 H.-P.
Boiler Iron Tanks, 800 and 200 gallons.
2 Bulkley Condensers, 600 H.-P. each.
1 Logging Locomotive and 6 Cars.
1 Blake Crusher, 10 x 7.
13 ft. Gauge Locomotive.
1 13 x 16 N. Y. Safety Power Vertical Engine.
1 8 x 8 Nagle Vertical Engine.
1 6 1/2 ft. x 14 ft. Horizontal Tubular Boiler.
2 2 1/2 ft. x 14 ft. Horizontal Tubular Boilers.
1 30 H.-P. Marine Boiler.
2 Maud's Boilers, 6 x 12, with Boilers.
1 Brennan Crusher, 8 x 25.
1 Lidgerwood Hoister, 7 x 10, with Boiler.
2 Platform Scales. 1 Ingersoll Rock Drill.
1 Duplex Fire Pump, 1000 gallons.
100 ft. of 7-in. Wrought Pipe. 1 Boring Bar.
G. M. CLAPP, 74 Cortlandt St., New York.

FOR SALE.

BAKER BLOWERS, Nos. 1, 3, 4, 4 1/2, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 5, 7 and 8.
2 12 and 1 15 H.-P. Horizontal Boilers; new, very
cheap. 10 in. x 7 in. Blake Crusher; equal new. Cor-
liss Engine, band wheel in halves, 12 ft. x 24 in. x 9
in. hole. 1 large Boomer & Boschert Press. 1 Niagara
Fly Wheel Pump, 14 in. x 7 in. x 10 in., brass lined.
Purchasers of machinery and those who have it for
sale will do well to correspond with C. B. BIGELOW,
Machinery Expert and Appraiser, 45 Dey St., New
York City.

OLD BOILERS WANTED.

We cut them up for Scrap Iron.
Will buy old Boiler Plate in rings
and sheets 1-4 in. thick and
upwards.

G. W. SCHULTZ & CO.,
No. 308 Walnut St., Philadelphia.

1 30 in. x 80 in. x 8 ft. Pease Planer. New.
1 Putnam Car Axle Lathe. New.
1 Cold Sawing Machine for iron and steel. New.
1 Jones & Lamson No. 3 Plain Screw Machine. Second
hand.
1 Parham Plain Screw Machine. Second hand.
1 Jones & Lamson 23-in. swing Turret Chucking
Lathe.
1 Brown & Sharpe No. 2 Screw Machine, wire feed.
The above Tools can be had at very low
prices.

DANIEL KELLY,
51 N. 7th St., Philadelphia.

Corliss Engine, 14 x 36; first-class condition.
Plain Engine, 12 x 30; good order.
Belt Wheel, 8 ft. diam., 20 in. face, 7 in. bore.
Belt Wheel, 10 ft. diam., 13 in. face, 6 1/2 in. bore; split
Belt Wheel, 11 ft. diam., 18 in. face, 13 in. bore; split.
2 Sturtevant Fans, 8 ft. high.
Clutch Pulley, 60 in. diam., 23 in. face, 5 7/16.
Large assortment New and Second-hand Machinery
Shafting, Pulleys, Belting, Tools, Iron, &c.

H. B. BIRTWELL,
343 North 3d St., Philadelphia.

Great Bargain.

A full set of Automatic Cut-off Engine Pat-
terns, with drawings, wood cuts and patent
right to manufacture; are almost new, and
were made by the finest workmen. If sold
at once will let them go at a sacrifice. Address
"ENGINE," No. 112,
office of The Iron Age, 96-102 Reade street, New
York.

FOR SALE.

5 Centrifugal Pumps.
2 3 H.-P. Engines. New.
8 5 H.-P. Engines. New.
8 20 H.-P. Engines, also up to 80 H.-P. New.
10 5 and 10 H.-P. Gas Engines. New.
12 Drill Presses, new, different sizes.
800 Truck Wheels, new, 1 1/2 cts., New York.
All guaranteed fully.
H. H. MANSFIELD, 126 Liberty St., New York.

FOR SALE.

Large lot of Loco. Boilers,
50 to 100 H.-P., in first-class order.

Can furnish stacks, grates and all
fittings to suit purchasers.

CHESTER BERTOLETTE & CO.,
Norristown, Pa.

FOR SALE. PUMPS, ENGINE & BLOWER.

1 Cameron Pump, No. 12 Special.
2 Guild & Garrison Pumps, No. 3.
2 Small Pumps.
1 8 in. x 12 in. Vertical Engine.
1 Dimpfel's Blower, 5 ft. x 20 in.
DAN'L W. RICHARDS & Co.,
86-92 Mangin St., New York.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each,
good and cheap. 2 Iron Tanks, 8 ft. in diameter,
30 ft. long, 8-8 iron, 11,000 gallons capacity. Cy-
linder Boilers for Stacks, 40 and 42 in. diameter.
Other Stacks from 10 in. up to 20 and 30 ft. long.
Hoisting Engine. Round and Square Iron
Tanks, different sizes. Dealers in all kinds of
Scrap Iron, New and Old Metals and Machinery.
BUSSENIUS & CUNLIFFE,
12th and Washington Ave., Philadelphia.

FOR SALE. CRANK and GEARED SHAPERS.

Write us for Bargains.

J. STEPTOE & CO., Cincinnati, O.

FOR SALE.

25 lb. section iron T Rails in good con-
dition for relaying.

WM. H. PERRY & CO.,
Providence, R. I.

Squeezer For Sale.

Extra strong, with engine attached 17 x 24 in.
Weight of Squeezer alone 96,000 lbs. In use
two years. For further particulars address

P. O. BOX 205,
Pittsburgh, Pa.

FOR SALE.

Complete Bessemer Plant, second-hand, by
Galloways, Manchester. Only done 18 months'
work. Consisting of one pair of High Pressure
Vertical Blowing Engines, Cylinders 30 inch
steam, 42 inch air, 4 feet stroke. Hydraulic
Pumps, Accumulator, two eight-ton Converters,
One Hydraulic Centre Pit Crane complete and
two five-ton Ingot Cranes, Distributing Boxes,
Cupolas, Cupola Staging, Lift and Casting
Ladles complete.

Drawings and fuller particulars on applica-
tion to

THOMAS W. WARD,
Fitzalan Chambers, Sheffield, England.

Screw Machine. (Large Size.)

Jones & Lamson's No. 11, with 2 1/2-in. hole,
clutch gears, chasing bar, with full assortment
of hobs. Turret 13 in., with auto. feed, and
complete with chucks and tools; first-class or-
der. Will be sold low.

J. J. McCABE,
68 Cortlandt St., New York.

MACHINERY, NEW AND SECOND-HAND, FOR SALE.

LATHES.
80 in. x 18 1/2 ft., Geared Face Plate.
60 in. x 15 ft., " " " " Double Lathe, com-
plete.
52 in. x 35 ft., Rod Feed only; one end has Hor. Bor-
ing Machine.
48 in. x 27 ft., cheap. 32 in. x 16 ft.
4 in. x 18 ft., Geared Face 25 in. x 12, 16, 20 and 24 ft.
Plate. 22 in. x 10 ft.
36 in. x 16 ft. 21 in. x 8, 10 and 12 ft.
33 in. x 27 ft. 20 in. x 5, 6 and 10 ft.
30 in. x 28 ft., Shafting 18 in. x 4, 6 and 8 ft.
Lathe, Pond. 17 in. x 6 and 7 ft.
28 in. x 22 ft., cheap. 15 in. x 6 ft.
24 in. x 10 ft. 14 in. x 6 ft.
10 in. x 4 ft., At.

PLANERS, SHAPERS, SLOTS.

3 ft. x 15 in. 7 ft. x 24 in. 9, 12, 15, 16 in. stroke
4 ft. x 20 in. 7 ft. x 30 in. Shapers.
5 ft. x 22 in. 8 ft. x 31 in. 15, 20, 24 in. stroke
5 ft. x 24 in. 12 ft. x 34 in. Shapers.
6 ft. x 24 in. 16 ft. x 42 in. 8, 13 in. stroke Slot-
5 ft. x 25 in. 22 ft. x 62 in. tery.
6 ft. x 21 in. 24 1/2 ft. x 54 in.
Lincoln Millers Gang Drills, Screw Machines.
Steam Hammers, 100, 150, 1000 and 3000 lbs.
Drill Presses, 20, 24, 28, 30, 44 in., Upright.
Bolt Cutters, 1 1/2, 1 3/4 in.
Flanging Machine, O'Brien Pat., for Circular
Boiler Heads.
Gear Molding Machine, Scott's Pat., 3 different sizes.
Bliss Punching Press, No. 75.
Corliss Engines, 12 in. x 24 in., 14 in. x 36 in., and 16
in. x 42 in.
Brown Engine, 16 in. x 48 in. Whitehill, 11 in. x 18 in.
Vertical Engine, 13 in. x 16 in., N. Y. Safety Steam
Power Co.
Send for latest list.

GEO. PLACE MACHINE CO.,

120 Broadway, New York.

Relaying Rails and Narrow Gauge Equipment For Sale Cheap.

100 tons I Beams from 7 to 15 in. and 15 to 28
ft. long.
200 tons 35 pound Iron Tee Rails.
200 " 30 " " " with Splices.
300 " 48 " " " " " "
25 " 16 " " " " "
500 " 52 " " " " " "
with Chairs.
1000 tons Flat Rails, all weights.
200 Narrow Gauge Flat, Coal, Box and Stock Cars; 4
Coaches, 4 Mail and Baggage, 10 Boarding and 20 Hand
and Push Cars, 18 Standard Gauge Locomotives.
I am in the market at all times to buy or sell any-
thing in the way of second-hand Equipment Rails,
also Scrap. In answering, kindly mention this paper.

L. K. HIRSCH,
549 Rookery, Chicago, Ill.

For Sale or Rent.

Rolling Mill and Nail Factory of the Lewis-
burg Iron and Steel Co. Mill supplied with
water, slate roof buildings, 2 engines, 4 large
tubular boilers, 7 puddling furnaces, 1 large
heating furnace with boiler over same, 42 nail
machines, 2 trains of rolls, and other machinery.
Connection with Pennsylvania R.R. and Phil-
adelphia & Reading R.R. by switches on both
sides of mill. Works now in operation. Address
ALFRED HAYES, Secretary,
Lewisburg, Union Co., Pa.

FOR SALE.

One 16 x 24 in. Standard Gauge Locomotive.
One 15 x 20 in. Standard Gauge Locomotive.
One 7 x 12 in., 36-in. Gauge Locomotive.
Fire Box Boilers from 1 to 15 horse-power in
stock; Engines, Boilers, Shears.
Hoisting Engines, Derricks and Contractors'
Machinery.

THOMAS CARLIN'S SONS,
Allegheny, Pa.

FOR SALE.—Manufacturing Interest.

Parties desiring to change their business re-
lations will sell their stock in a well established,
prosperous and growing corporation located in
Chicago, manufacturing specialties and a sta-
ple line of steam and plumbing goods. The
stock earns large dividends annually and is an
excellent investment. Full particulars upon
application. Address "STOCK,"
office of The Iron Age, 59 Dearborn St., Chicago.

4 BOILERS.

Four second-hand 75 H.-P. Double-Deck Boilers,
with all fittings and fixtures. In first-class
condition. Cheap.
Two 2-flue Boilers, 48 in. diam. x 32 ft. long, in
prime condition. Cheap.
One 16 x 22 Side Crank Engine.
One 16 x 36 Side Crank Engine.
Full line of new and second-hand Boilers and
Engines always on hand.
H. M. Sciple & Co., 3d and Arch Sts., Philadelphia, Pa.

WHERE TO LOCATE NEW FACTORIES.

The Illinois Central Railroad Company is desirous of calling the attention of capitalists and manufacturers to the advantages possessed by the different cities and towns on their Southern Lines and on the lines of the Yazoo & Mississippi Valley Railroad Company in the shape of

UNLIMITED RAW MATERIAL, PROXIMITY TO MARKETS, CHEAP LABOR,

Fuel, etc., and believes that it needs but a presentation of their merits to attract the careful attention of all interested in converting the raw materials to be found on their lines into the finished product. Prominent among these are cotton, hard and soft wood, clay, fruits, vegetables, etc. A descriptive pamphlet of 150 pages, entitled "Where to Locate New Factories," has been issued by the Company, and a copy will be sent free on application to the undersigned, who will also give any further information as to

Inducements Offered

by the different localities for desired industries. Individuals or companies wishing to embark capital in cotton, clay, wood-working, canning or other industries, can find a profitable field and hearty co-operation. For particulars address GEO. C. POWER, Industrial Commissioner I. C. R. R., 58 Michigan Ave., Chicago.

FOR SALE OR RENT.

Manufacturing Property.

Having purchased the Auburn Manufacturing Company's plant, with greater facilities for manufacturing carriage forgings, which my increasing trade demands, I offer my former plant for sale or rent, which consists of two-story stone and wood building, 60 x 30, and three-story stone and brick building, 75 x 40. Also forge shop, 22-ft. posts, 150 x 54, with large double windows between each bent. 50 x 30 boiler house. Splendid water power, 11 ft. head. One 64-in. American Turbine. One 24-in. Little Giant Turbine. 200 ft. 2 3/4 Cold Rolled Iron Shafting. 40 ft. 2 1/2 Cold Rolled Iron Shafting. 60 ft. 2-in. Cold Rolled Iron Shafting. Furnished with self-oiling boxes. Water wheel governor; 4-ton Buffalo Scales. The premises cover about 2 1/2 acres. Shipping facilities of the best. Located near N. Y. Central and Philadelphia and Reading depots. Will be sold cheap and on easy terms or rented. For particulars address

RICHARD ECCLES, Auburn, N. Y.

An old established

Iron Manufacturing Firm

of Pittsburgh, who have space and power to spare, would like to add to their business the manufacture of electric supplies or specialties for railroad or other use, that would consume part of their product, or that could be made an adjunct of the iron business. Those having anything in the above line, in actual use or in prospectus, who desire such connection can address

"IRON WORKS,"

office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa., with information covering merits of articles to be manufactured, and same will be carefully considered, and appointment made if found suitable.

WANTED.

Responsible parties to manufacture and sell on royalty, a cheap portable steel or iron **CULVERT BRIDGE**; it is adapted to all small streams, runs, etc., in roads, streets, **RAILROADS**, etc.; improved roads is the order of the day; use this bridge, put it below the level of the road, cover it over and thus prevent jarring and wear and tear of vehicles, etc. Apply to

W. A. NICHOLS,
Girard Building, Philadelphia, Pa.

STEAM PUMPS.

All inquiries for second hand pumps, of which we always have several on hand, of our own and other makes, will have prompt attention. For catalogues of the Hooker Patent Steam Pumps and full information in regard to steam pumps address

HOOKER-COLVILLE STEAM PUMP CO.,

30 W. Randolph St., 2d and Carr Sts.
CHICAGO. ST. LOUIS.

THE FOUNDRY AND MACHINE WORKS

OF

Nicol, Burr & Co.,

Peoria, Ill.,

For Sale or Lease.

Address directly.

ATTENTION, MANUFACTURERS

A Good Opening for an Iron and Steel Company.

A partially completed Iron and Steel Mill and large cash bonus will be given to a satisfactory manufacturing establishment to locate in a town near Pittsburgh. A fine new iron and steel building, with machinery, &c.; 1000 feet side track; two railroads with third projected; 7 to 15 acres of fine land; location unsurpassed. Plenty of coal, coke, pure water, limestone, paving block and building stone, fire clay, timber, iron ore, &c. Other manufacturing in operation. Personal interview or correspondence with principals only. For particulars address, at once,

W. W. GIFFEN,
217 Ferguson Building, 104 Fourth Ave.,
Pittsburgh, Pa.

FOR SALE.

24 20-in. Muck Rolls.
One two-high 20-in. Muck Train.
One double three-high 20-inch Muck Train.
One large Rotary Squeezer, with spare pieces.
68 Puddling Furnaces.
All in A1 condition. Address

"ROLLING MILL,"

office of *The Iron Age*, Rooms 509 510 Hamilton Building, Pittsburgh, Pa.

FOR SALE.

An old established prosperous business in a large city of New York State, fitted complete for and engaged in the manufacture of hardware specialties. Or with right party or parties who thoroughly understand this business will form an incorporated company, leaving in all of the present plant as stock. Present proprietor sells because other matters more important to him are imperatively demanding all of his time. Address "PROSPEROUS BUSINESS," office of *The Iron Age*, 96-102 Reade St., N. Y.

WANTED,

At Colorado City, Texas, a Roller Mill to be put up at once. Big inducements offered. Address H. H. BEYER, Colorado, Texas.

Hardware Stock.

For sale in the city of Rochester, stock of general Hardware, House-furnishing Goods, Paints, Oil, Glass, &c. First-class location; doing a good business; amount of stock about \$6000; will bear a close investigation. Address "HARDWARE," Box 114, Rochester, N. Y.

NOTICE.

A thoroughly posted hardware man to take from \$5000 to \$20,000 stock in a company which now has \$75,000 paid up; has been established 14 years; business prosperous. Located at a capital Southern city. Prefer a man of 35 to 40 years. Must take an active interest. Splendid opening to right man. All references required. Address "SOUTHERN CITY," office of *The Iron Age*, 96-102 Reade St., N. Y.

FOR SALE.

A nice, clean stock of Builders' Hardware and Carpenters' Tools. Best location and trade in the city. Address

W. J. FLYNN HARDWARE CO.,
St. Joseph, Mo.

FOR SALE.

5 x 5 in. cylinder Engine, vertical, 5 horsepower; new. Also 30 in. x 5 ft. Vertical Boiler, 5 horsepower; new. All guaranteed. Spot cash, only \$181. WM. C. CODD, Baltimore, Md.

A RARE BARGAIN.

FOR SALE.—An established Hardware, Furnace, Range, Stove and Sheet Metal Business of 24 years' standing, at Carthage, Missouri (county seat of Jasper County). Stock, fixtures and tools, well assorted and in first-class condition. New brick store building, with full plate-glass front, latest improved adjustable full height shelving, roller ladders, elevator, &c. Building covers 50 x 122 feet, consisting of basement, first and second floors (all dry and nicely lighted). Will rent or sell building. Largest stock, leading trade (almost exclusive cash), and best location (corner public square) in the city. All goods, &c., at cost and carriage; no bonus required for good will of trade. **Terms spot cash.** Reason for selling, wish to retire from business. Only those who mean business need apply. Please call on or address.

McCRILLIS BROS.,
Carthage, Missouri.

FOR SALE.

A stock of Builders' Hardware, Farming Implements, Stoves, Ranges and Furnaces, together with a well-equipped Tinshop. Also paints, oils and varnishes, store fixtures, two horses, wagons, sleighs and harnesses. Business located four miles from Boston, in the city of Malden, of about 30,000 inhabitants. A rare chance for the right man. Reason for selling, present owner engaged in other business in New Jersey. Address or apply to

C. D. ADAMS,

No. 23 Court St., Boston.

Office hours, 12 to 1 p.m.

Agencies Wanted.

Having a large and centrally located store, convenient to the hardware trade of New York City, would like to secure agencies for heavy hardware, pipe, iron, &c., on salary or commission. Address

CHAS. J. STEBBINS,
103 Reade St., New York.

IF FROM ANY CAUSE

You have goods to offer at specially low figures for **SPOT CASH**, that you wish disposed of without danger of interference with your regular trade, address

W. M. CALDWELL,
Agent for the sale of **Special Lots**,
75 Chambers St., New York.

FOR SALE.

Hardware business in a city of 40,000. Best location. Stock will invoice about \$10,000. Annual sales, \$30,000, which can be increased readily. Present owner is engaged in other business and can give this no personal attention. Favorable terms. Address

J. C. PETERS,
Fort Wayne, Ind.

WANTED.

Foundry Contracts to be completed before September 1st. Capacity of works, 9 tons per day. Can make close prices and prompt shipment.

FRANK C. PATTEN CO.,
Sycamore, Ill.

WANTED TO BUY.

Scrap Soft Sheet Steel. Cut in strips 3 to 6 in. wide, No. 18 and 20 gauge. PULLMAN SASH BALANCE CO.,
Rochester, N. Y.

Collections?

All merchants and manufacturers have past due claims which need attention. We make such business a specialty. Our terms and method are right. Write us and see.

THE HARDWARE BOARD OF TRADE, Ltd.,
4 and 6 Warren street, New York.
JAS. H. GOLDBY, Treas.

WE, THE UNDERSIGNED having purchased the **Foundry and Machine Shop** owned by B. Wiltse & Co., which is located on tide water, with a first-class dockage, in the village of Catskill, Greene County, New York, are now ready to rent, lease, sell or make any other arrangements with parties who are desirous of going into the foundry and machine business.

We would prefer to enter into arrangements with parties who already have an established business, to whom advantageous and agreeable terms will be given.

The natural advantages of the location cannot be surpassed. The freight rates, both by water and by rail, are very low.

W. S. C. WILEY,
E. L. WASHBURN,
ALEX. WILTSE.

All communications should be addressed to
ALEXANDER WILTSE,
Catskill, Greene County, New York.

For Sale Cheap.

About 10,000 feet of Track of Johnson Girder Street Rail, section P 63. In good order.

About 6000 feet of Steel Well Tubing, 9 inch outside diameter, 3-16 inch wall. This can be sold with plain ends or threaded and shipped complete with couplings if desired. Practically new.

One old 2-flue Boiler, 10 feet long, 3 feet diameter, 3/8-inch shell. To be sold at a scrap price. 25 two platform, 2 horse closed Street Cars. Perfect order, but need repainting.

WANTED FOR QUICK DELIVERY.

About 10,000 feet of Track, of 48, 50 or 52 lb. Steel T Rails. Second hand, in good order.

J. B. KENDALL,
Washington, D. C.

FOR SALE.

Stock of Hardware, Stoves and House-furnishing Goods at West Superior, Wisconsin. Business has been established seven years. Sales average \$80,000 yearly. Stock and fixtures will inventory \$15,000; can be reduced to suit purchaser. This is a splendid opportunity to engage in an established business, in the most promising town in the Northwest. Apply
CHAPIN-WELLS HARDWARE CO.,
Duluth, Minn.

FOR RENT.

Part of store, basement and sub-basement, 20 Murray St., New York, from May 1st. Address
"DESIRABLE,"
office of *The Iron Age*, 96-102 Reade street, N. Y.

FOR SALE.

Pipe Cutting Machine, with expanding dies from 4 to 10 inch. In good order.
GEO. P. JACOBS & CO.,
Kent Ave. and So. 6th St., Brooklyn, N. Y.

CUTLERY.

First-class German manufacturer, who has been connected for a number of years with leading New York importing firm, solicits correspondence with first-class houses willing to take his agency for the United States. Best opportunity for good cutlery salesman to start in business. Apply, with references and full particulars, to

P. 5285, Rudolf Mosse,
Cologne, Germany.

For Sale Cheap.

3 Boiler Makers' hand rollers, 4 in. diameter by 50 inches long between housing; large enough to take in a 48 in. plate and roll 3/8 to 3/16 thick. Apply to

REUTER & MALLORY,
22 Light St., Baltimore, Md.

WANTED.

An experienced business man who can command from \$20,000 to \$30,000, to purchase an interest and capable of taking an active part in the management of the office of a well-known machine tool works. Address, with full references,

"MANAGEMENT,"

office of *The Iron Age*, 96-102 Reade St., N. Y.

FOR SALE.

A 150 horse-power "Zell" Safety Water Tube Boiler in first-class condition; in use only 2 1/2 years.
The Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.

AUCTION NOTICE.

HAYDOCK & BISSELL,

AUCTIONEERS.

Wednesday and Thursday, March 29th and 30th, 1893, at 10 o'clock each day.

At Nos. 12 Murray Street and
15 Park Place, New York.

Several Thousand Dozens of
Table Knives and Forks,
and Knives only,
Butcher Knives, Carvers, &c., &c.

A large line of fine
CAST STEEL NICKEL PLATED,
SCISSORS AND SHEARS,

Silver Plated Tea and Table Spoons and
Forks, Extra and Triple Plate,
Wm. Rogers Me. ium Knives, &c.,

Also a large assortment of Fine Cake,
Pie and Fish Knives and Forks,
Cream, oyster and Soup Ladles; fine
goods; extra double and triple plate, on
18 per cent. nickel silver. Also an invoice of Nickel Silver Tea and Table
Spoons and Forks; all best goods.

Also, for Account of Whom It May Concern,
to Pay Advances made to

THE EASTMAN & KRAUSS RAZOR CO.,

Several hundred dozen of The Central
Knife Co.'s First Quality Fine Pocket
Knives, and The Clauss Shear Co.'s First
Quality Cast Steel Nickel Plated Scissors and
Shears, all sizes. Also Fine Cushion, Belt and
Swing Razor Stropps. Goods will be sold without
reserve in quantities to suit Jobbing
and Retail Trade. Catalogues ready March
5th.

Any Manufacturer

of Hardware or Machinists' Specialties desiring
to be represented in New York City and vicinity,
will find it to his interest to address
E. J. HUSSEY & CO.,
80 John St., New York.

We are centrally located, active workers and
can furnish best of references.

CHARCOAL FOR SALE.

Upwards of 50,000 Bushels of Hardwood Charcoal made from second and third growth timber in Eastern Pennsylvania is offered for sale. For further information. Address

"CHARCOAL,"

office of *The Iron Age*, 96-102 Reade Street, New York.

CHARLES WEILAND.

I make a special business of buying and selling
Job Lots of

HARDWARE AND CUTLERY

Tools and Second Quality Files a Specialty.
Send for Catalogue.

143 Chambers St., New York

FOR SALE.

Punching and Shearing Machinery.

Hand and Belt Power.

Boiler Makers' Rolls.

NEW DOTY MFG. CO.,

Janesville, Wisconsin.

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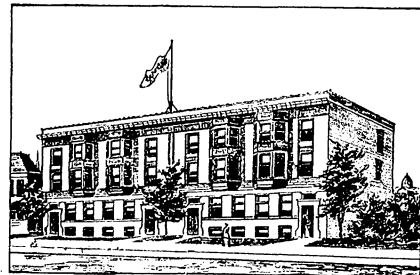
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70.18.88	72.09.09	74.08.30	76.08.51	78.13.72	80.19.93	82.19.14	84.24.35	86.24.56	88.30.17
60.14.60	62.14.81	64.14.02	66.14.23	68.19.44	70.25.65	72.25.86	74.31.07	76.31.28	78.36.49
50.17.32	52.17.53	54.17.74	56.17.95	58.23.16	60.29.37	62.29.58	64.35.19	66.35.40	68.40.61
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20.38.18	22.38.39	24.38.60	26.38.81	28.44.02	30.50.23	32.50.44	34.56.05	36.56.26	38.61.47
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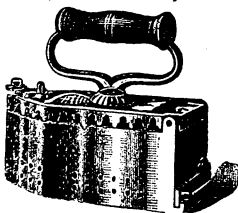
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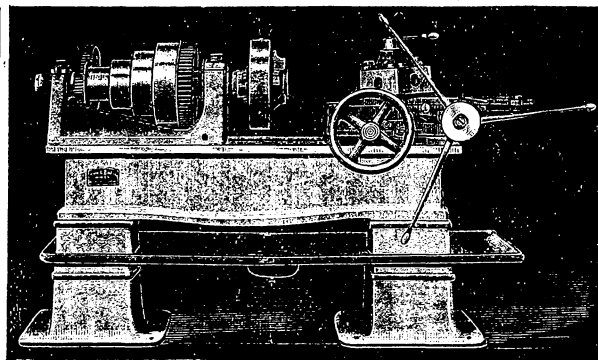
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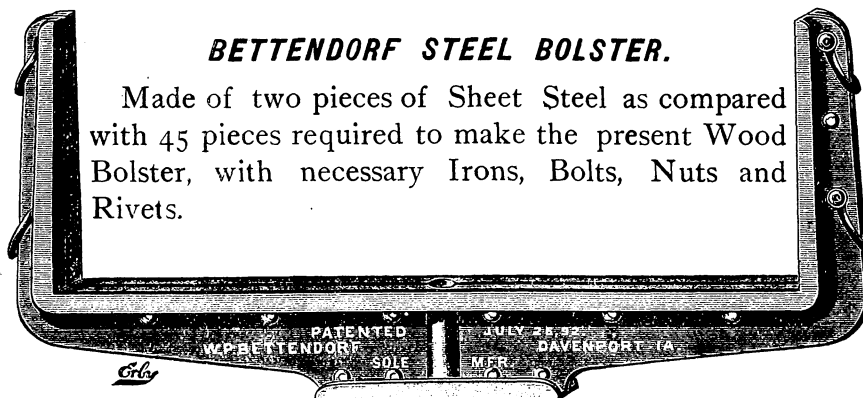
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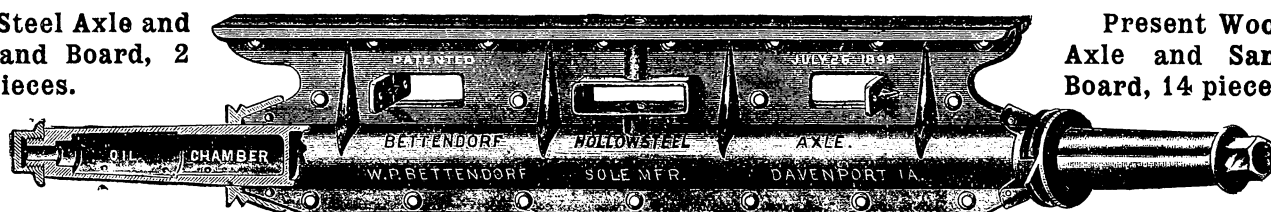
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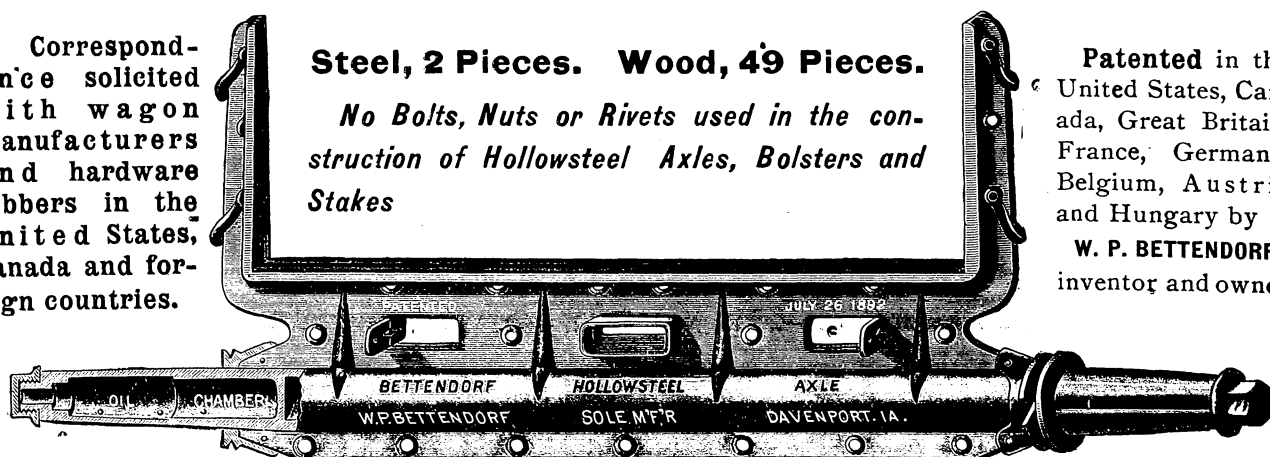
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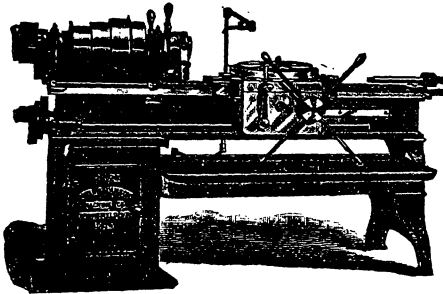
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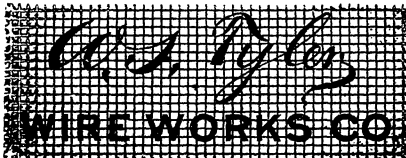
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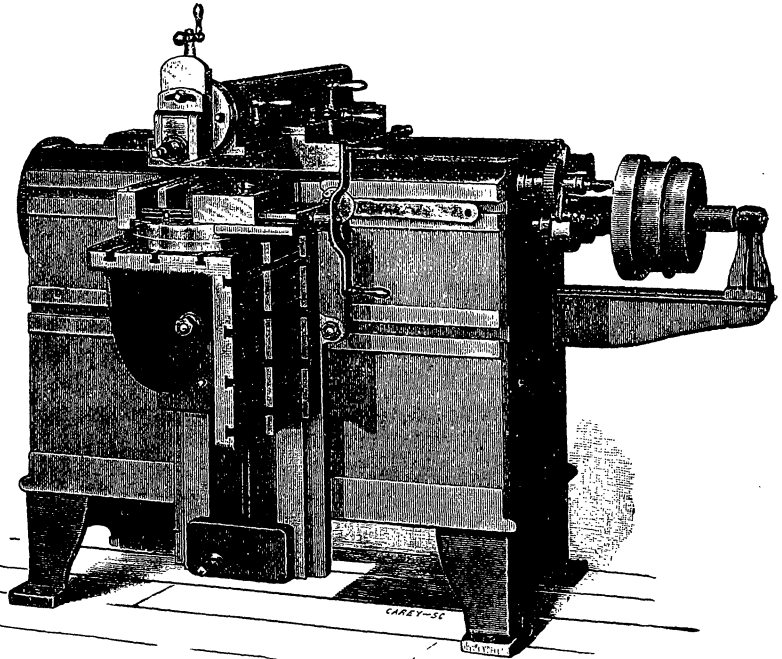
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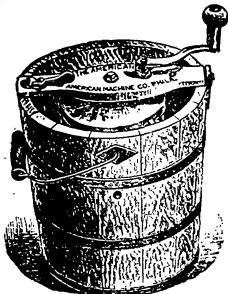
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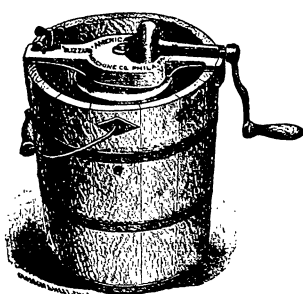
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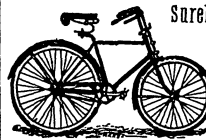
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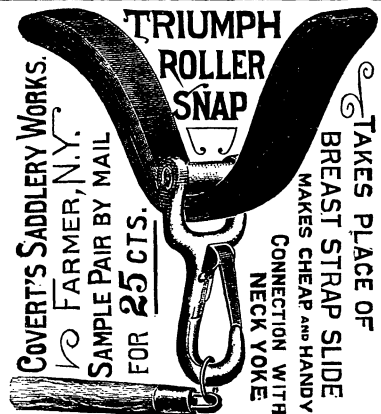
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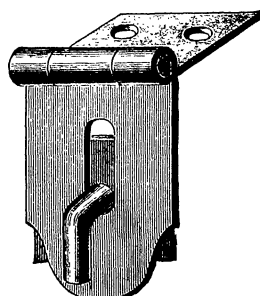
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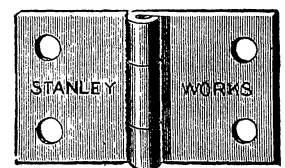
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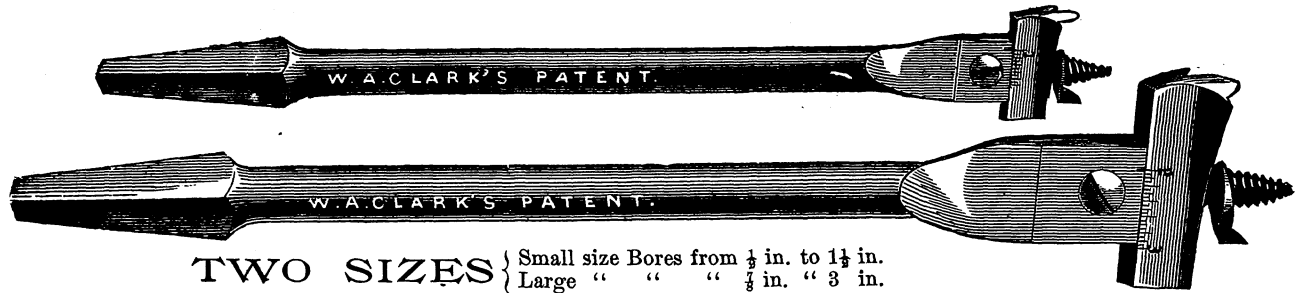


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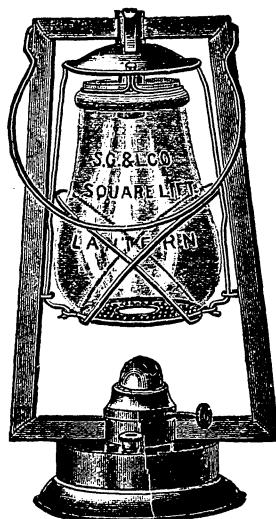
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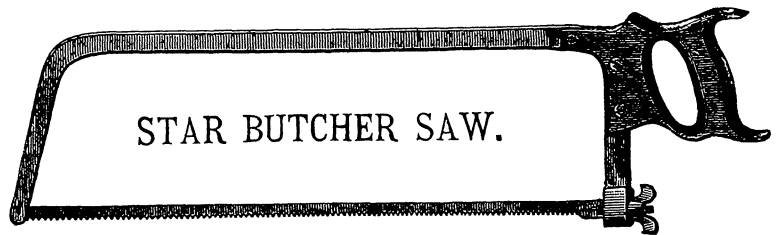
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Fig. 180.

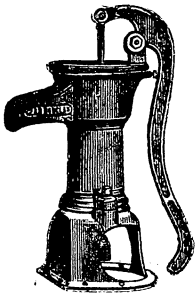
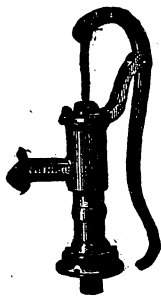


Fig. 78.



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Fig. 209.

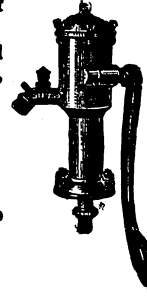


Fig. 381.



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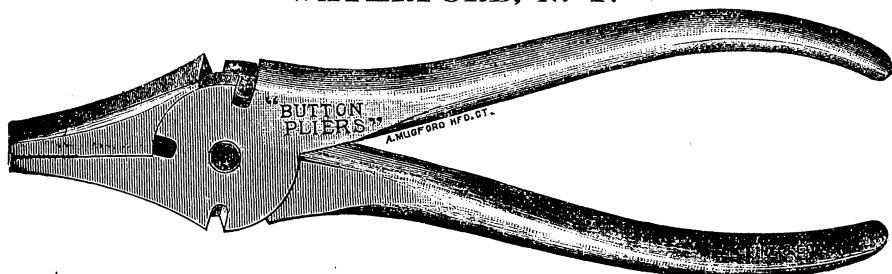
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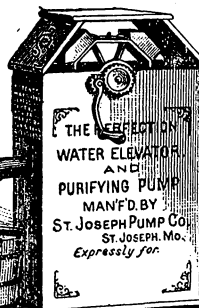
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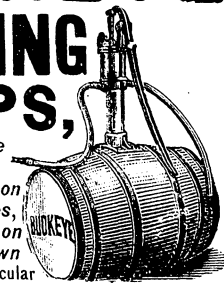
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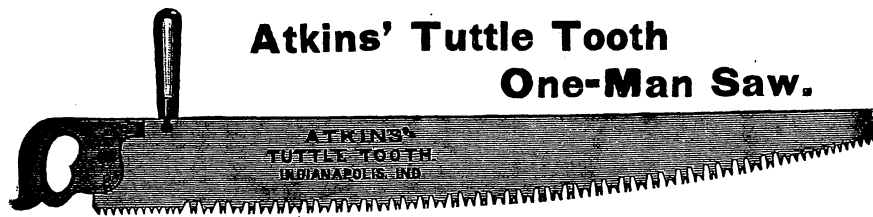
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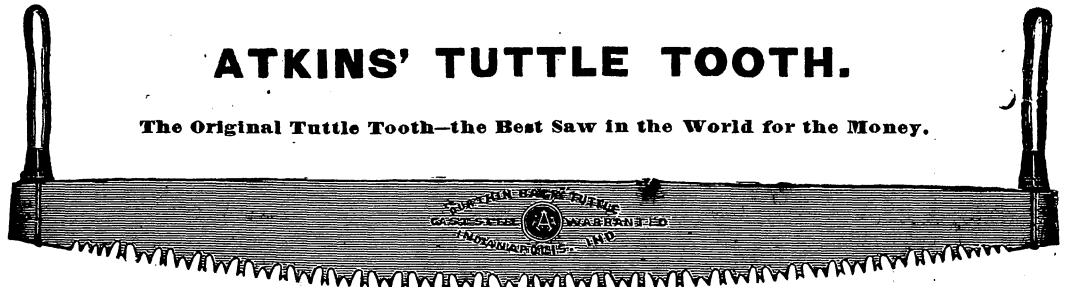
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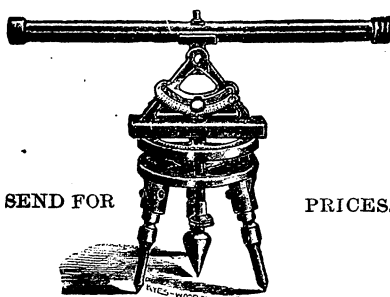
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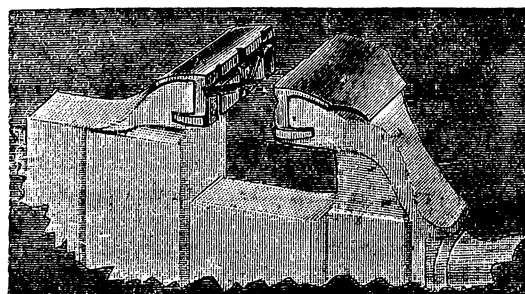
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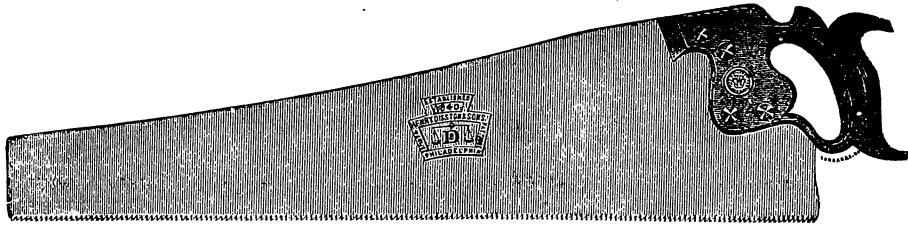
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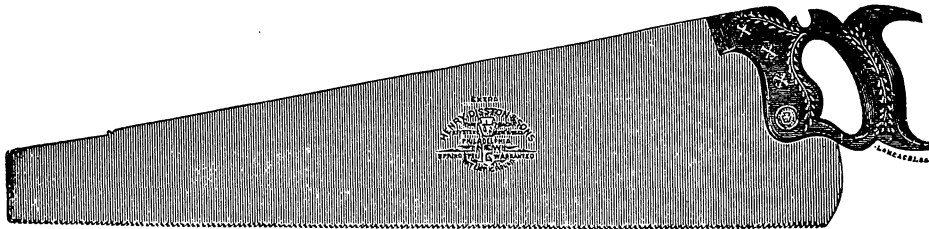
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This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work ; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

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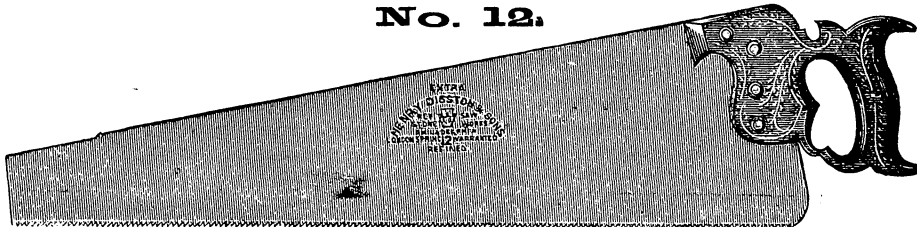
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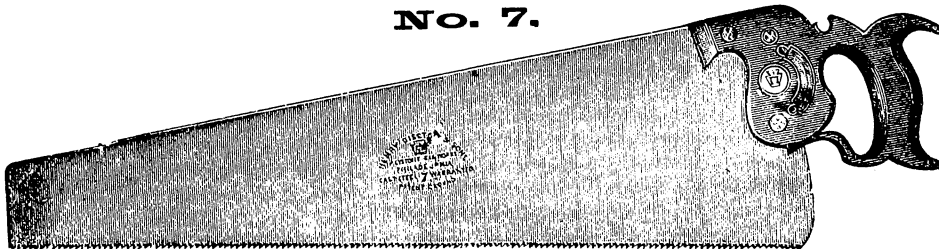
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

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DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

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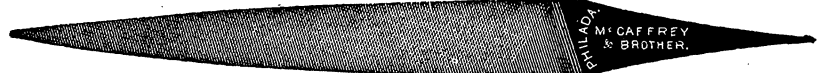
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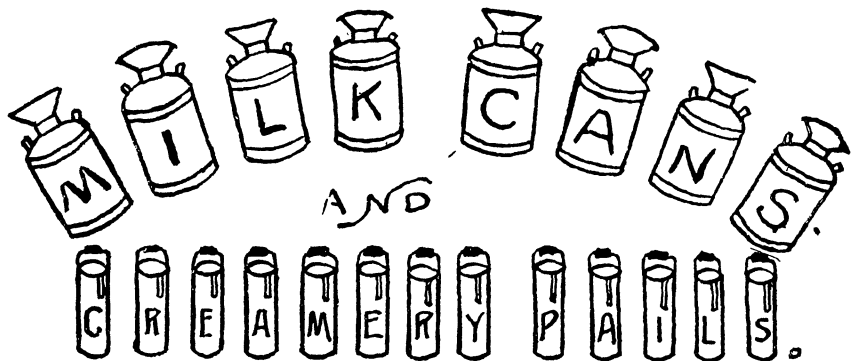
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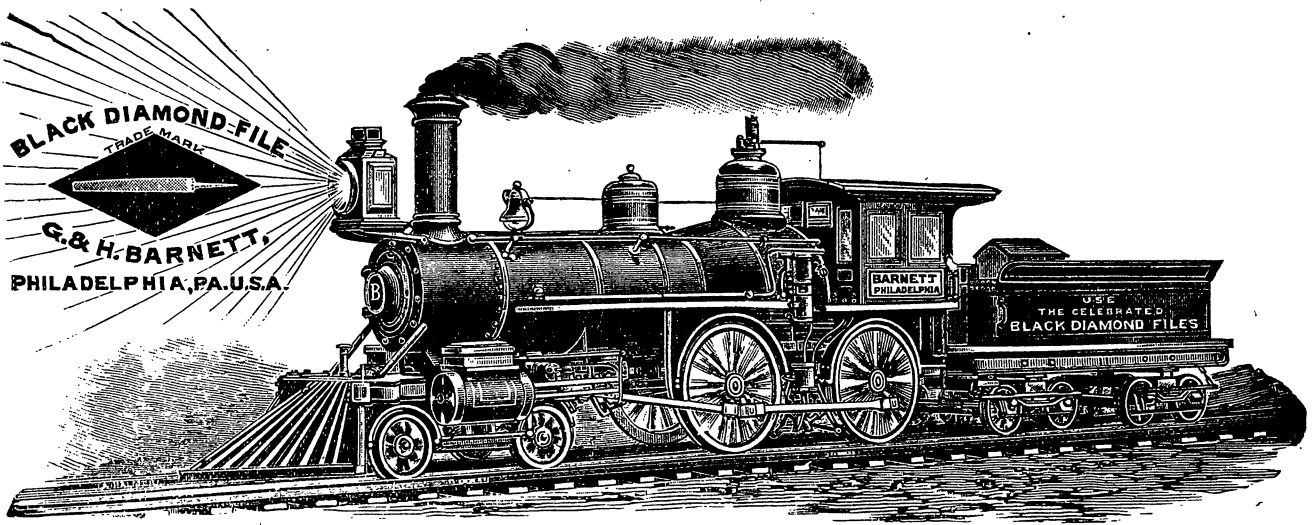
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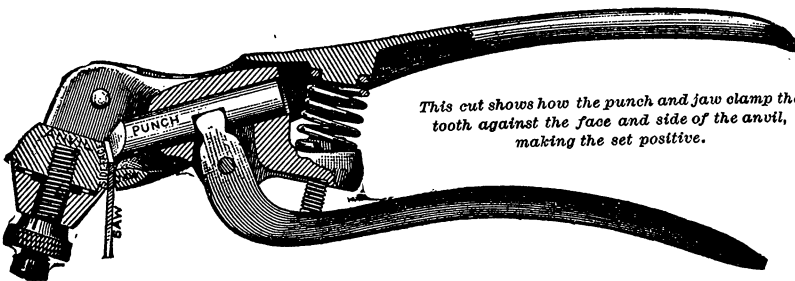


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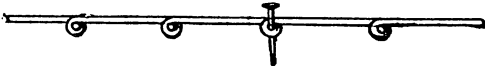
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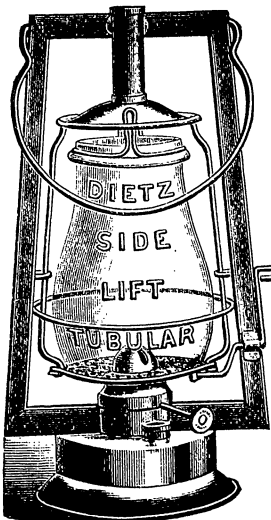
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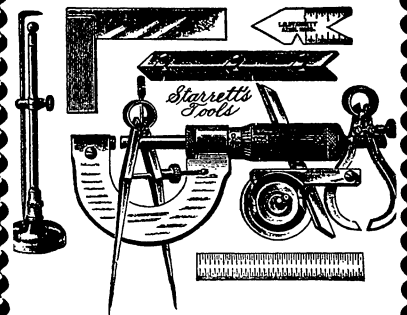
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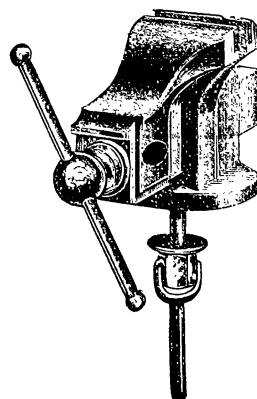
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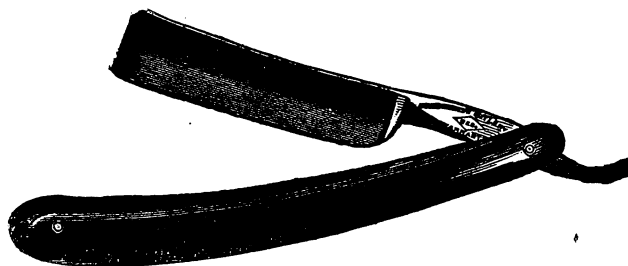
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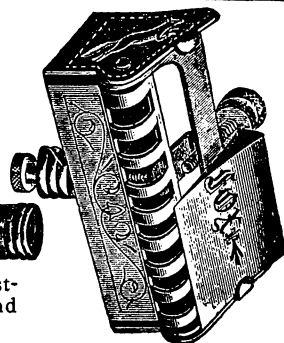
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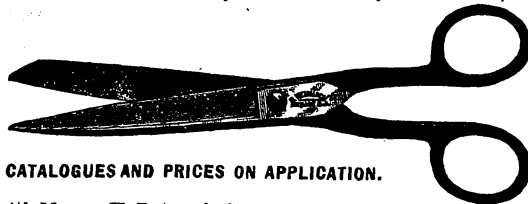
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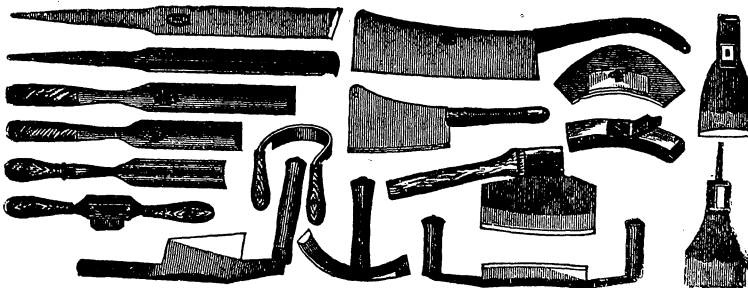
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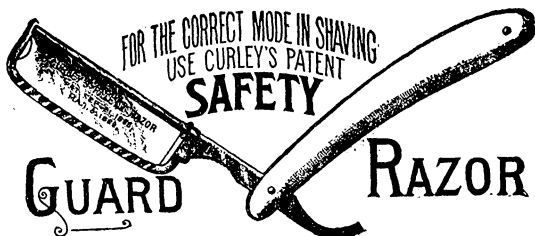
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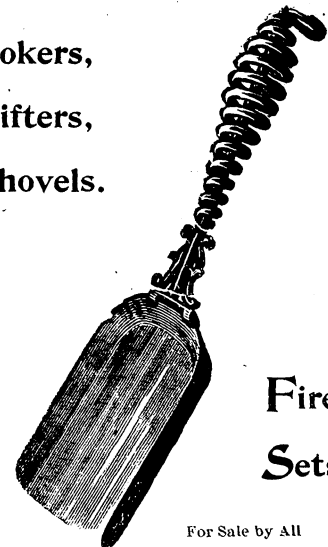
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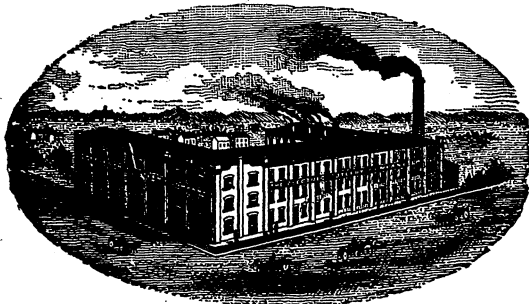
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SEND TO

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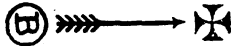
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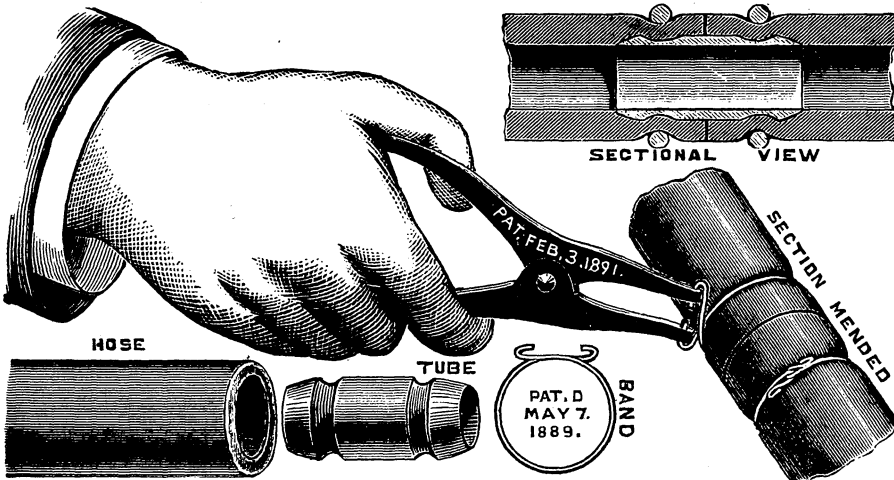
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**CHEAPER,
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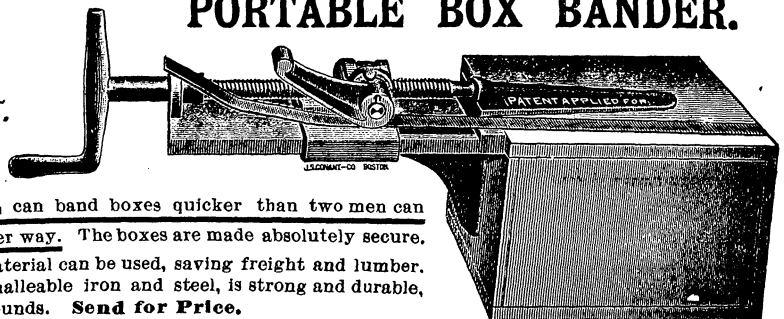
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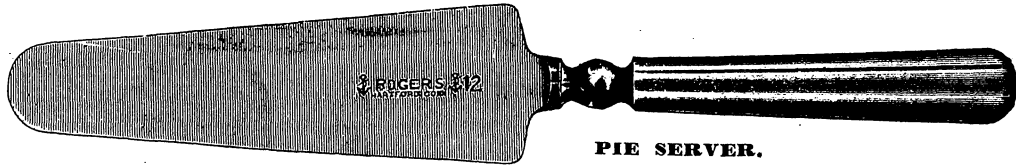
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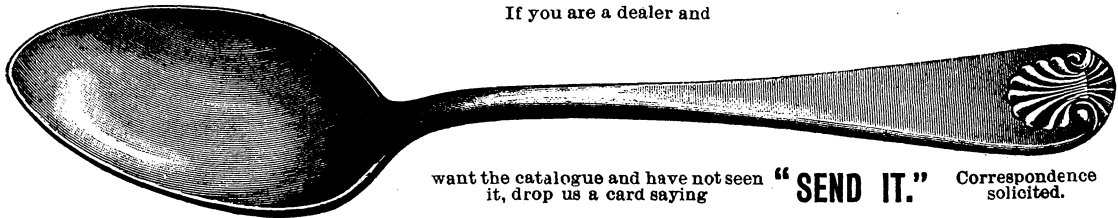
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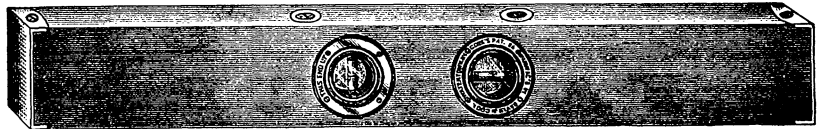
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Cottner's Pat. Dipper and Cup Handle.

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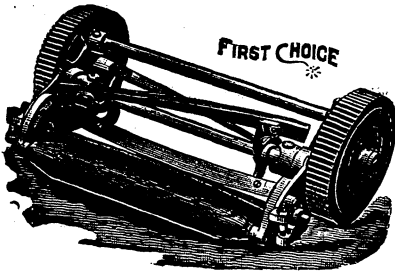
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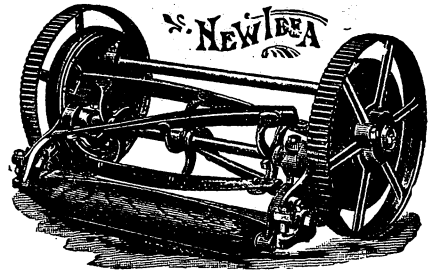
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Representing only Leading American Hardware Manufacturers.

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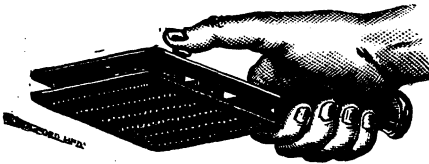


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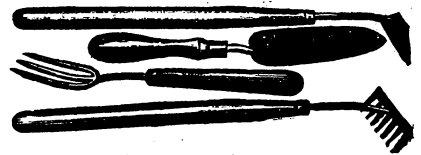


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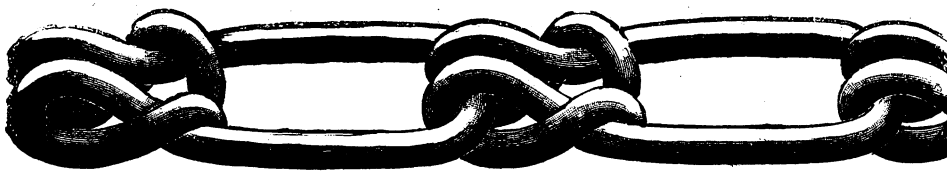
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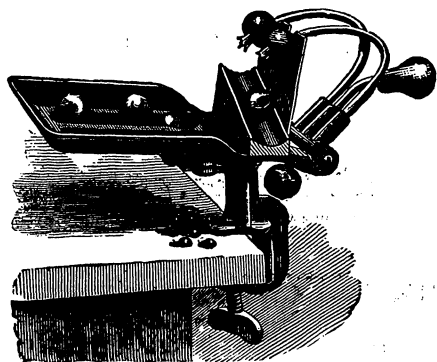
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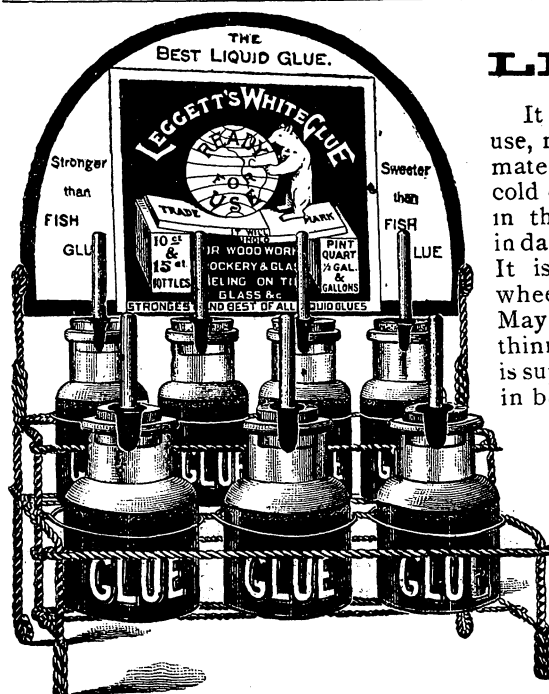
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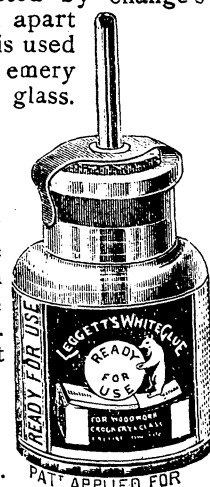
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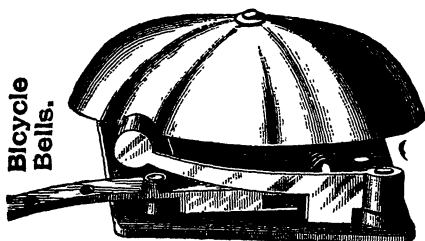
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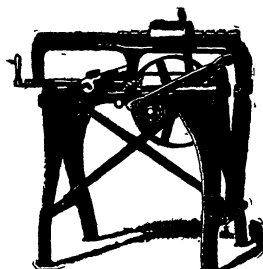
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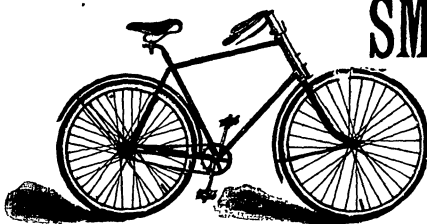
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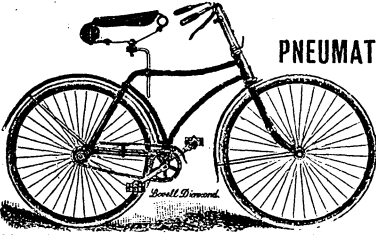
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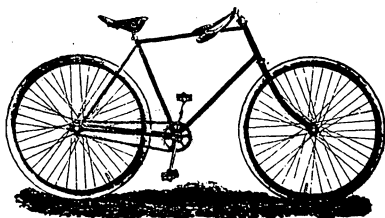
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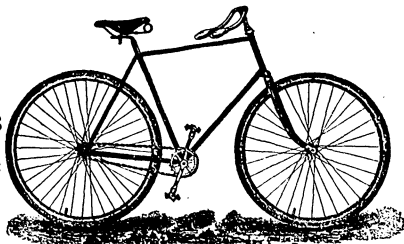
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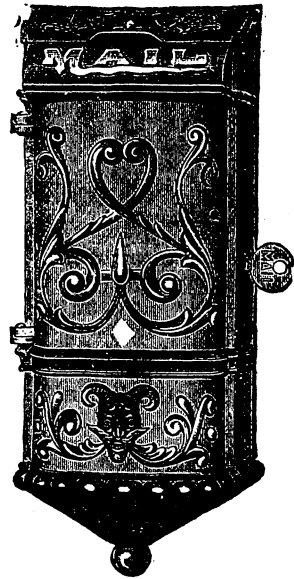
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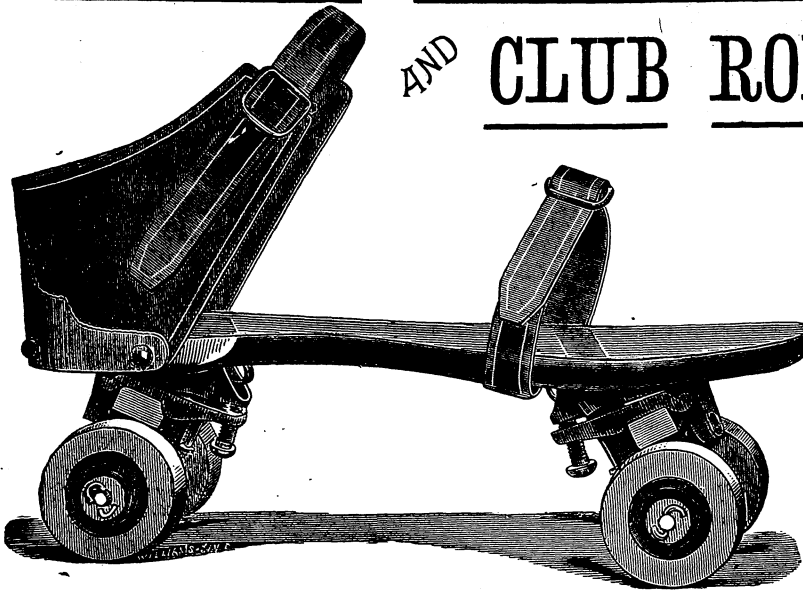
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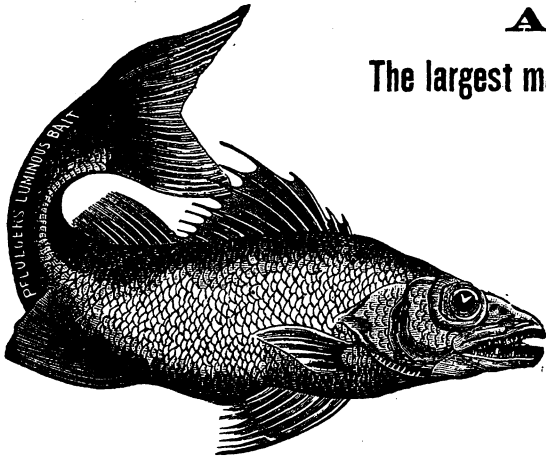
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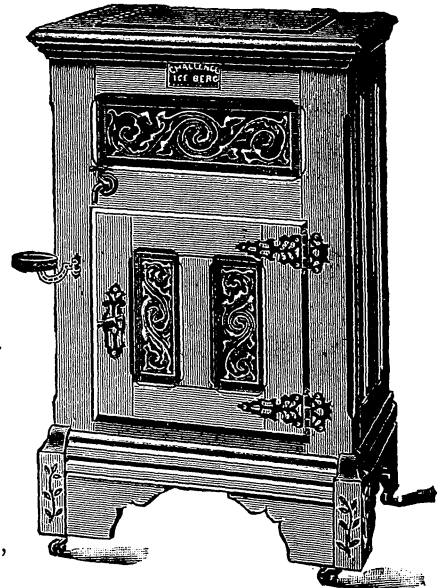
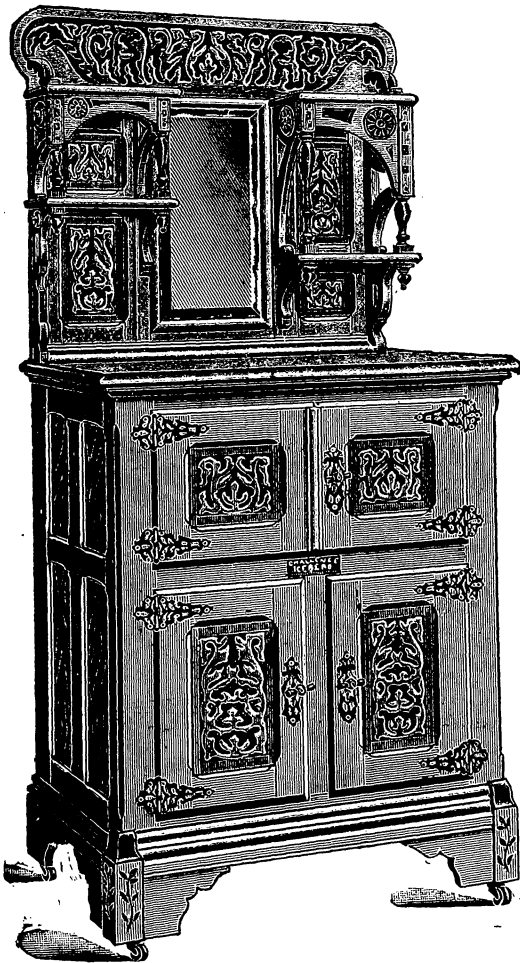
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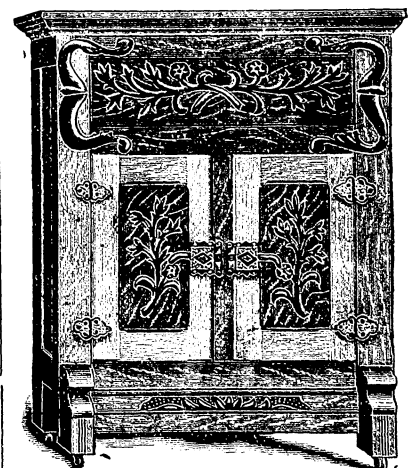
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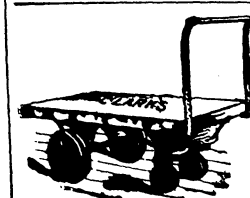
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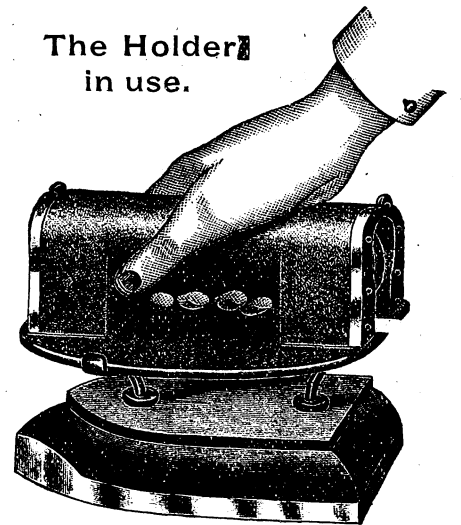
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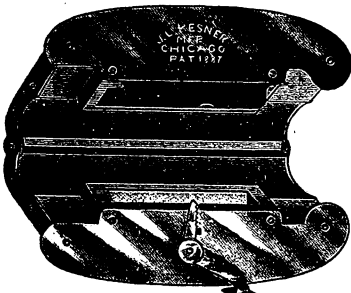
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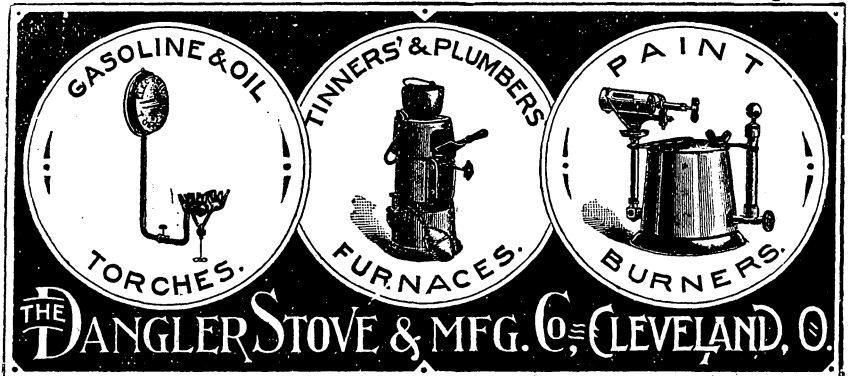
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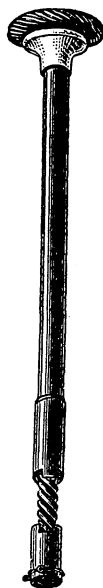
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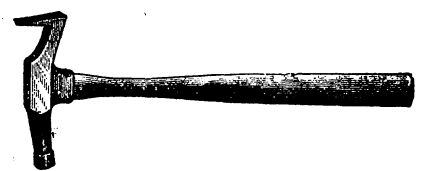
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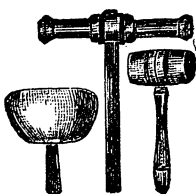
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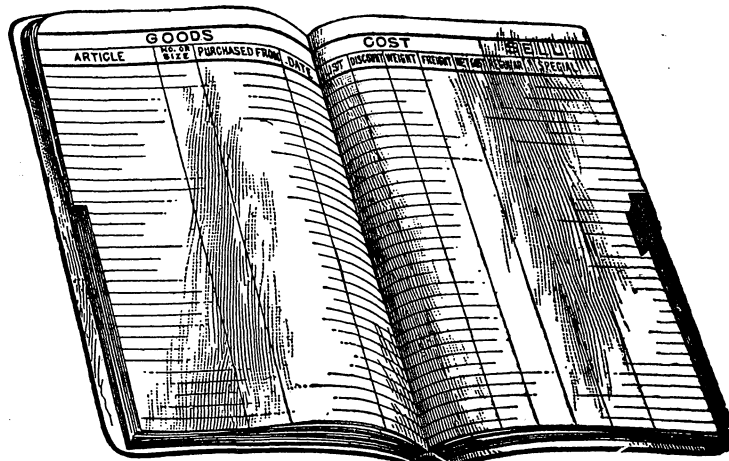
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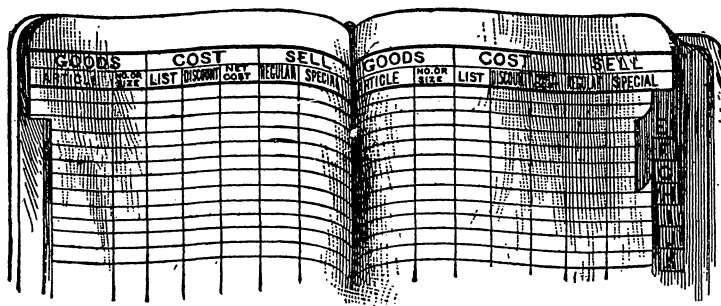
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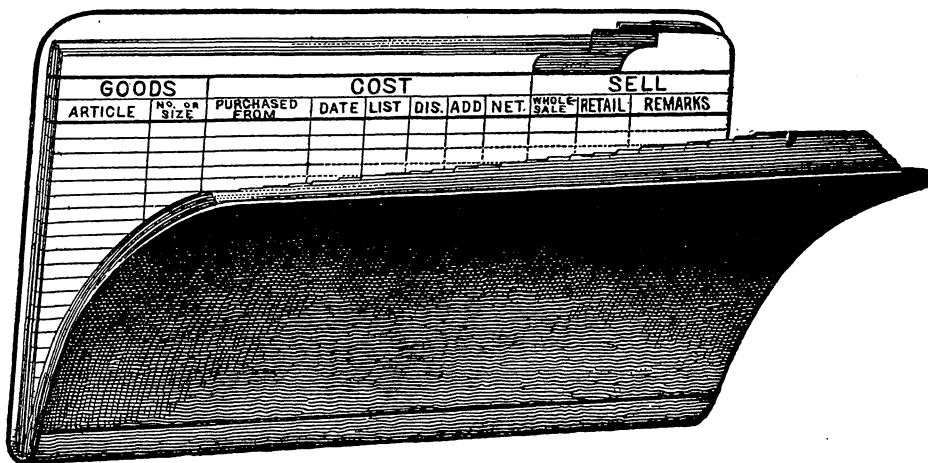
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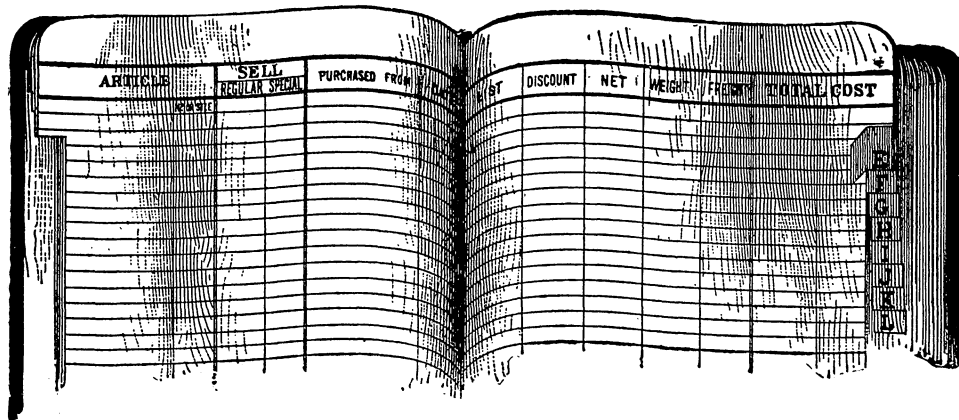
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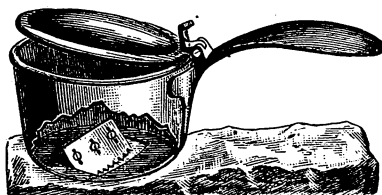
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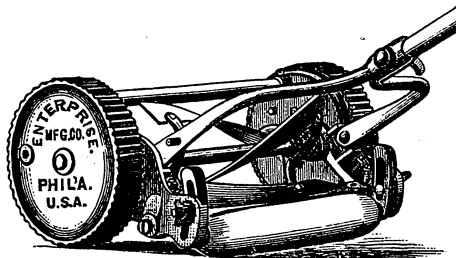
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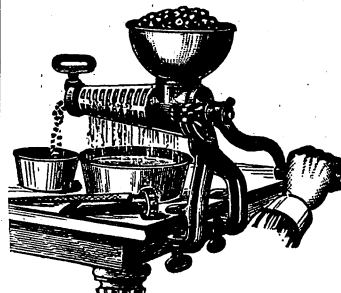
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7, 9, 11, 13 and 15 inches.
Simple in Construction.
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Light Running.
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FOR MAKING
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Adjustable Window Screens,

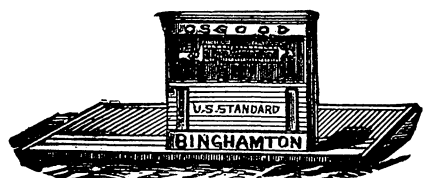
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All goods
guaranteed
first-class.

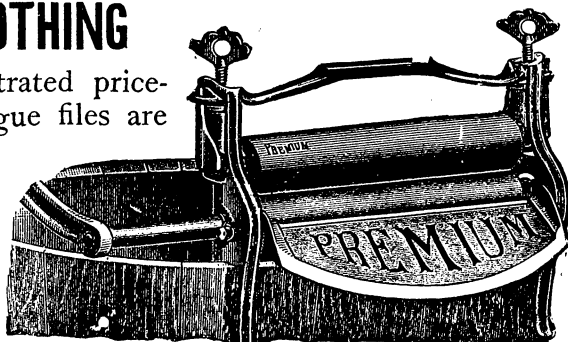
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Catalogue
Free.
Osgood & Co.
Binghamton,
New York.

Explosives and Their Powers. By M. BERTHE
LOT. Translated and condensed from the French
by C. NAPIER HAKE, Fellow of the Institute of
Chemistry, Inspector of Explosives to the Govern-
ment of Victoria, and WILLIAM MACNAB, F.I.C.E.
With preface by Lieut.-Colonel J. P. CUNILL R. A.
H. M. Inspector of Explosives. With illustrations.
8vo, cloth.....\$9.60

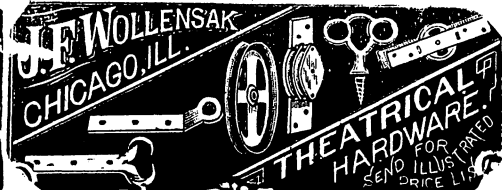
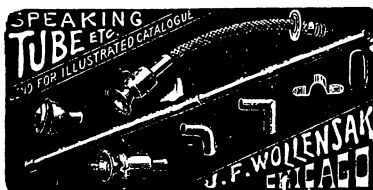
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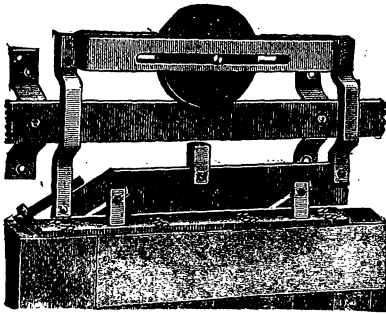


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LANE'S Pat. Steel BARN DOOR HANGER.

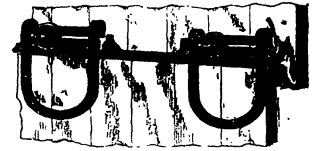
PARLOR DOOR HANGER.



Nos.	List.	Per doz. pair.	Nos.
11.....	\$15.00.....	1	
11½.....	18.00.....	1½	
12.....	22.00.....	2	
	30.00.....	3	
	36.00.....	4	

Liberal Discount to Trade.

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POINTS OF EXCELLENCE.

Being of Steel—No Breakage—Axle Not Running in a Box.
No wearing out in a Life-Time—No Oil Required. Operates
Wonderfully Easy—Never Screeches—Always in Order.

REMEMBER:

We were the originators of the Lane Barn Door Hangers.
All others of similar shape are but imitations.
Beware of alleged improvements and inferior goods.

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FOR DOUBLE DOORS, Each one to slide 4 feet or less,

Price, per set (of 4 Hangers), including 14 feet of Track, Gravity Stops, Striking Plates and Floor Plates.....\$6.00

FOR SINGLE DOORS to slide 4 feet or less.

Price per one-half set (of 2 Hangers), including 8 feet of Track and Fixtures.....\$3.00

LONG DISTANCE HANGERS for double or single doors to slide any distance.

Price, per set (of 4 Hangers), including 14 feet of Track and Fixtures.....\$8.00

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Extra Track when ordered, 9 cts. per foot.

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A REVOLUTION IN COOKING UTENSILS.

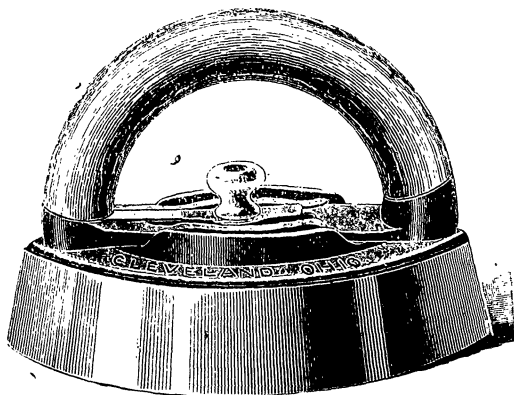
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One 2-Quart Pan, One 4-Quart Pan, One Large Fry Pan, One 13-inch Wash Bowl, Sent to any address for **\$5.00.**

ALL GAUGES OF ALUMINUM SHEET KEPT IN STOCK.

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Manufacturers of

All Kinds of Tinware and Sheet
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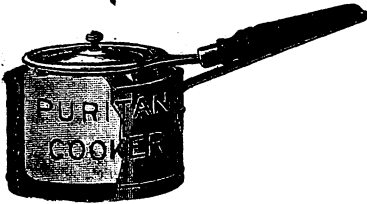
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The STUART & PETERSON CO.

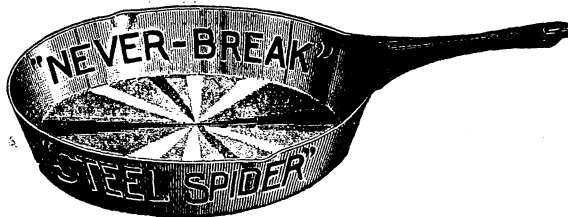
PHILADELPHIA, PA., U. S. A.

"PURITAN"COOKERS, COFFEE POTS AND
OTHER SPECIALTIES.Cooks Quicker than any other
Porcelain Rice Boiler made.**"NEVER-BREAK"**

Wrought Steel Spiders

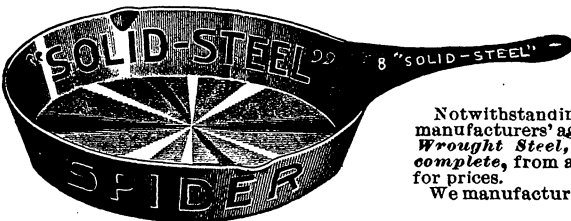
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MIRROR POLISHED—TINNED—PORCELAINED.



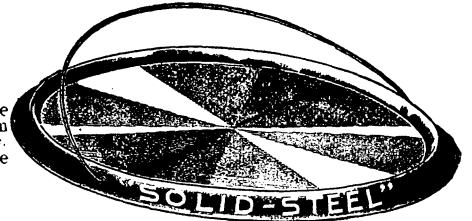
"MIRROR POLISH," the only Perfect Plain Steel Finish

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THE BRONSON SUPPLY COMPANY,
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PLANISHED and PLAIN STEEL.**"SOLID-STEEL" SEAMLESS HOLLOW WARE.**

No Seams, no Rivets in "Solid-Steel" Ware.

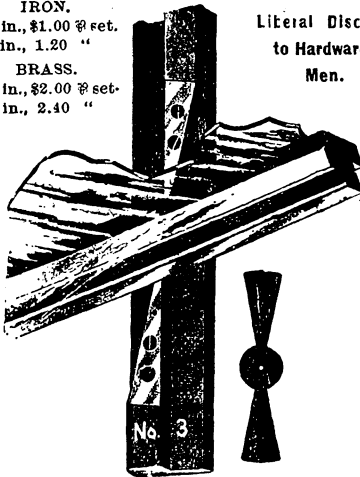
BRILLIANT FINISH.

Notwithstanding the claims made by some
manufacturers' agents, our spiders are made from
Wrought Steel, Without Seams or Rivets.
complete, from a single piece of metal. Write
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We manufacture our own goods.

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**Grennan's Sash Pulley Marker for Com-
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square or gauge. It always
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accurately, so the
pulleys are sure to
fit, saving a great
deal of trouble.
They are simple,
durable, handy, and
sell at sight.**Troop's Sash-Weight
Fasteners**Save 2 cents a win-
dow in cost of ma-
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putting on and make
a neater job than tie-
ing knots. Send for
circulars and prices.**J. W. Skelly & Son, - BRISTOL, CT.****HOWARTH REVERSIBLE SASH AND
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DETROIT, MICH.**IRON.
1 3/4 in., \$1.00 per set.
2 1/4 in., 1.20 "
BRASS.
1 3/4 in., \$2.00 per set.
2 1/4 in., 2.40 "
Literal Discount
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Men.This sash centre is made of malleable
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sides.**HARVARD TROUSERS STRETCHER.**

Patent Applied for.

Will restore pant legs to perfect shape,
creased and pressed in the latest style,
by allowing them to remain in over
night. It exerts an outward pressure,
and removes all wrinkles and bags at
the knees.

(DIRECTIONS.)

Dampen the cloth after inserting the
stretchers.Made from steel wire, plated.
Price Per Pair, \$1.00.

Sample Pair to Dealers, 50c.

GEO. H. GREGORY,

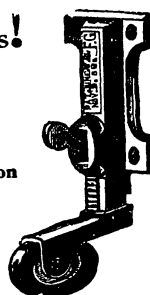
35 Arch Street, Boston, Mass.

No
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Our Combination

**Door Check
Lock and
Bumpers**Holds
door
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positionFor sale by all Jobbers. Write
for Circulars.**Unity Door Check Co.,**

81 Dearborn St., Chicago, Ill.

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HARDWARE, CUTLERY, TOOLS

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RAILWAY SPECIALTIES.

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**"CONROY"
Refrigerator Door****Fasteners**Have rapidly supplanted all
others

Refrigerator Trimmings.



Pat. Dec. 15 85.

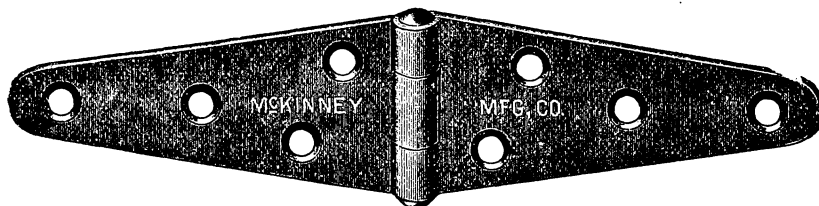
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STEEL HINGES AND BUTTS

EXCLUSIVELY.

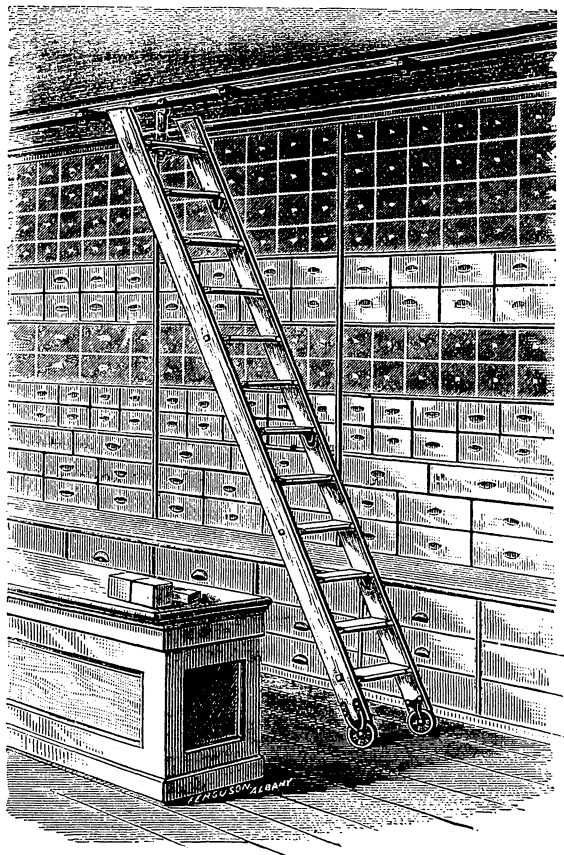
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ORDERS FILLED
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"NONE BETTER."

THE "NOISELESS" STORE LADDER.



The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

ALBANY, N. Y.

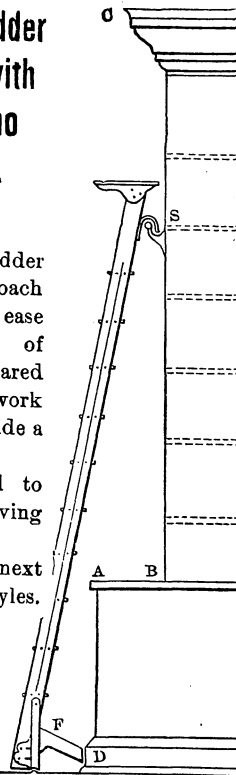
The Bicycle Step Ladder

New Floor Ladder
for Shelving with
Narrow or no
Base Shelf.

No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.

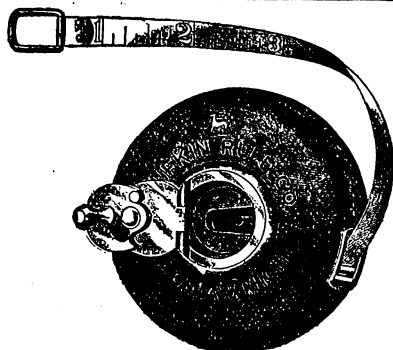
Can be applied to any kind of shelving made.

See this space next week for other styles.



Send for Illustrated Catalogue and Prices to

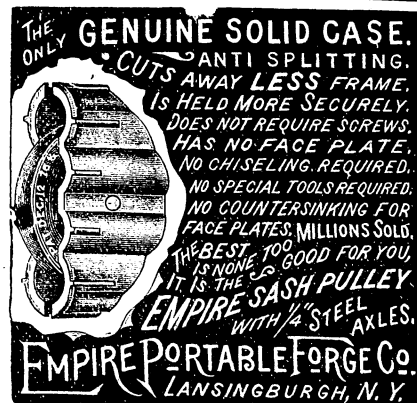
The Bicycle Step Ladder Co.,
184 & 186 Clark St., Chicago, Ill.

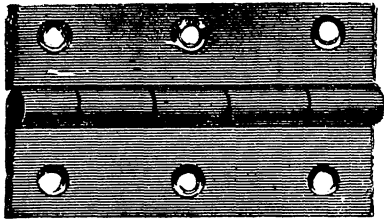


"RELIABLE" Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval.

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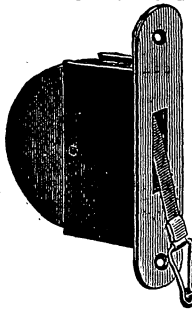
MANUFACTURERS OF

**BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.**

MONEY, TIME and LABOR SAVED

When you build if you will
use our Steel Frame Sash
Balance.

NO EXPERIMENTING.



We have made
them 7 years. They
require no box frames

Applied as easily
as a common pulley.

Costs less money
than weights and cord

We guarantee
them 10 years.

Ask your Hardware Dealer for the Pull-
man Steel Frame. Don't accept imitations.

PULLMAN SASH BALANCE CO., Rochester, N. Y.

COMMON SENSE SASH BALANCE.

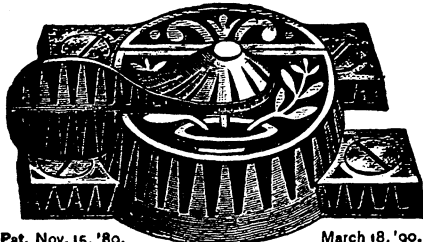


The Best and most Practical
substitute for weights invented.
The most Durable, the Cheap-
est and best device for all
ordinary windows. Balances
when in position are out of
sight. No rivets, bolts or
screws are used in putting it
together, so that nothing can
get out of order or need repair-
ing. No cutting, boring or
marring the sash, as the Bal-
ances are let into the jamb.

Manufacturers of Sash Balances, Sash
Locks, Sash Lifts, Monitor
Saw Irons.

STEWART & BAKER,

107 State Street, Rochester, N. Y.



Pat. Nov. 15, '89.

March 18, '90.

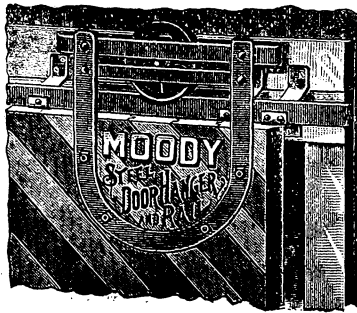
THE CHAMPION Meeting-Rail Sash Lock

Has the greatest efficiency and a larger amount of
the finest trade with first-class Hardware dealers
than any other Sash Lock, showing the high appreci-
ation of Architects, Builders and Dealers.

THE CHAMPION SAFETY LOCK CO.,
Frankfort Street, CLEVELAND, OHIO.

VICTOR MFG. CO., Newburyport, Mass.

STEEL RAIL.



Showing one-half set of hangers attached
to door.



The Only Bracing Bracket Made.

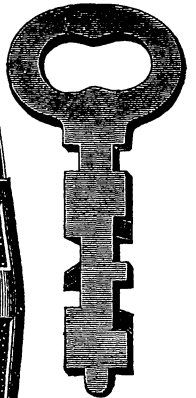
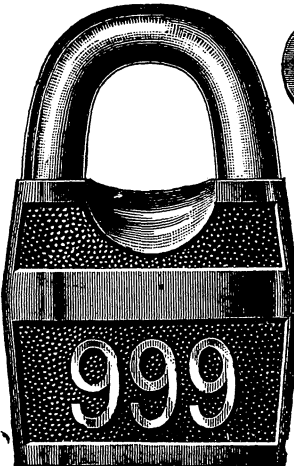
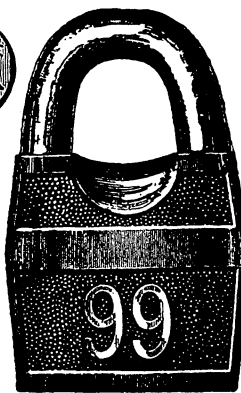
HANGERS.	PRICE-LIST.	Per Doz. pri.
No. 5, to run 6 feet, 3 1/4 in. wheel,	-	\$10.00
No. 6, to run 10 feet, 4 1/4 in. wheel,	-	15.00
No. 7, to run 15 feet, 5 1/4 in. wheel,	-	22.00
RAIL, per foot.....		6 1/2 cents.

THE HANDSOMEST AND BEST

JAIL PADLOCKS

IN THE MARKET.

Cast Bronze.
2 Nickel Plated Steel Keys each.
4 Honest Tumblers each.



The Parts are MACHINE MADE, accurately fitted, durable and secure. Liberal discounts to
the trade render these the cheapest fine Jail Padlocks in the market.
For sale by the best Jobbing Houses and by all live Retailers.

No.	PRICE, PER DOZEN.
99, Weight, 1/4 lb., 2-Keyed, 4 Tumblers,	\$6.00
999, " 1/2 " 2 " 4 " "	8.00
For Chain attached, add	2.00

MILLER LOCK CO., SOLE MANUFACTURERS, FRANKFORD, PHILADELPHIA, PA.

Crown and Giant Sash Cord and Bell Cord. Braided and Twisted Picture Wire
Spool Wire, Clothes Lines, Ventilator Cords, Garden Lines, Chalk Lines, Annun-
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Send for Catalogue, Samples, Prices.

Bright Wire Goods, Picture Nails, Knobs, Hooks, Chain, Clothes Line Pulleys, etc.

—MANUFACTURED BY—

OSSAWAN MILLS CO., Norwich, Conn.



NEW = DESIGNS

In Genuine Bronze,
and Rust-Proof Iron.

BUILDERS' HARDWARE

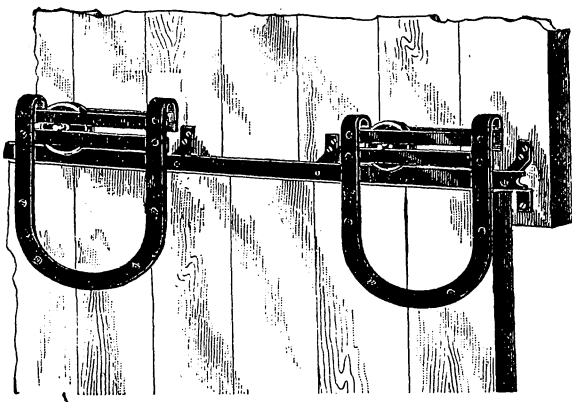
—FOR—

ARTISTIC DWELLINGS,
Hotels, Offices, etc.

READING HARDWARE CO.,

NEW YORK, PHILADELPHIA, CHICAGO.





Lane's Patent Steel Barn Door Hangers,

"O. N. T." Track for same.

The first Anti-friction Steel Door Hanger placed upon the market and to-day stands as the original and best. Sold in all the States of the Union, as well as abroad. Also Lane's Noiseless Steel Parlor Door Hanger, using Single Steel Track, a great success.

Lane's Pat. Self-measuring Faucet, measuring liquids as drawn. Swift's Coffee Mills in great variety.

Manufactured by **LANE BROS.**, Poughkeepsie, N. Y.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., NEW YORK.

PATENT PERFECTION PADLOCK

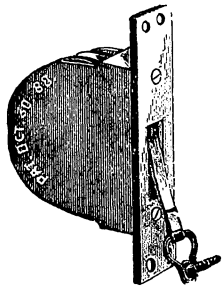
Eight Tumblers. Key Turning Both Ways.



Sizes; $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches; of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{4}$ and $\frac{3}{8}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price Lists and Circulars



Merit Always Wins.

THE CALDWELL SASH BALANCE

Has been the standard for five years.

Write for our new catalogue of Hardware Specialties.

CALDWELL MFG. CO., Rochester, N. Y.

READING HARDWARE CO., Agents.

81 Reade St., New York.

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73 Wabash Ave., Chicago.

WE ARE HEADQUARTERS ON POST HOLE DIGGERS.

Watch this "Ad." for illustrations of the different styles, viz.:

Little Giant, Hercules, Invincible, Scheidler and New Champion.

THIS CUTE ILLUSTRATES THE
"New Champion."

This style of Digger is familiar to the trade, but this one is made much neater and more substantial than all others of this class.

The Blade is made of the best Crucible Steel and properly tempered. The Shank is made of the best Malleable Iron.

The Handle is wood, of convenient size and shape, is tapered toward the top, and mounted with a Tamping Iron. The tool is well finished, and presents a very neat appearance. This Handle is by far nicer to work with than the thin iron handle Diggers on the market. It fills the hand nicely, and being securely bolted to the shank, cannot come loose.

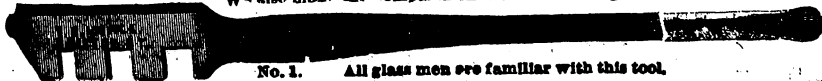
F. E. KOHLER & CO.,

Sole Manufacturers,

Canton, Ohio.

J. C. McCARTY & CO., Gen. Agts., 97 Chambers St., N. Y.

MONCE'S Novelty Glass Cutters are the standard. No. 17 just out. Send for Illustrations and Price. We also make the Compartment Font Interchangeable Lock Stencils that are having such a run.



S. G. MONCE

No. 1.

All glass men are familiar with this tool.

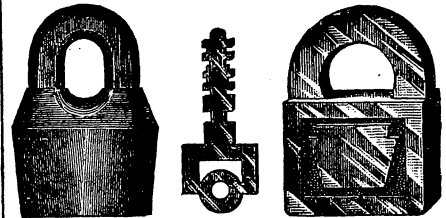
BRISTOL, CONN.

KEYSTONE LOCK WORKS,

—Established 1879.—

E. T. FRAIM, Lancaster, Pa., U. S. A.

MANUFACTURER OF



Patent Inter-Locking Tumbler Scandinavian or Jail PADLOCKS, in 56 grades and sizes. Key and Self-Locking. Brass, Bronze, Steel and Malleable Iron. Red, Black, Bower-Barff and Bright Brown finish. Also a full line of fine flat padlocks in Bronze and Steel. All fully described and illustrated in our new catalogue, furnished free to the trade.

SURPLESS, DUNN & ALDER,

General Agents, 97 Chambers St. New York.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

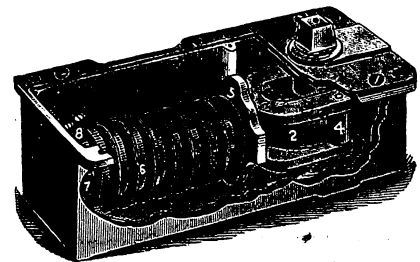
to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY

"**THOMAS MORTON**"

65 Elizabeth Street,

Write for Prices. **NEW YORK.**



CHECKING SPRING HINGES FOR SWING DOORS.

Applied in floor under door. They close the door gently, without noise or violence and stop it at once at the centre. Doors cannot sag, springs do not break or set.

J. BARDSLEY, 149 & 151 Baxter St., New York.

Illustrated Price-List on Application.

SASH WEIGHTS

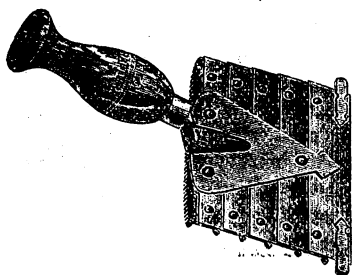
E. E. BROWN & CO.,

McKean and Meadow Sts.,

PHILADELPHIA PA.

AMERICAN CURRY COMB CO.,

TROY, N. Y., U. S. A.



MANUFACTURERS OF ALL KINDS OF

CURRY COMBS IN STEEL, BRASS AND IRON.

VERY BEST QUALITY AND FINISH.

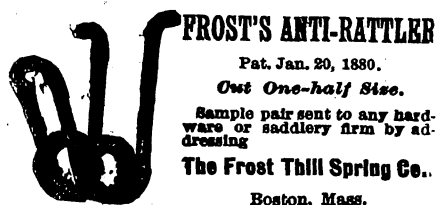
New York Sales-
rooms with

FULLER BROS., No. 33 Chambers St.

San Francisco, Cal., Salesroom with
The GEO. F. EBERHARD CO., 23 Davis St.

Portland, Oregon, Salesroom with
The GEO. F. EBERHARD CO., 23 Front St.

Illustrated Catalogue and Prices to Jobbers on Application.



FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

Out One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.

Boston, Mass.

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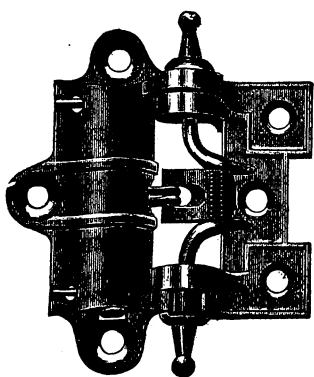
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A Full Line of Carriage Hardware
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Holds the door strongest when closed.



Resistance gradually decreases in opening.

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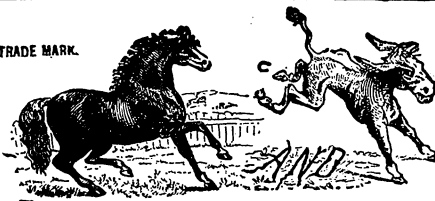


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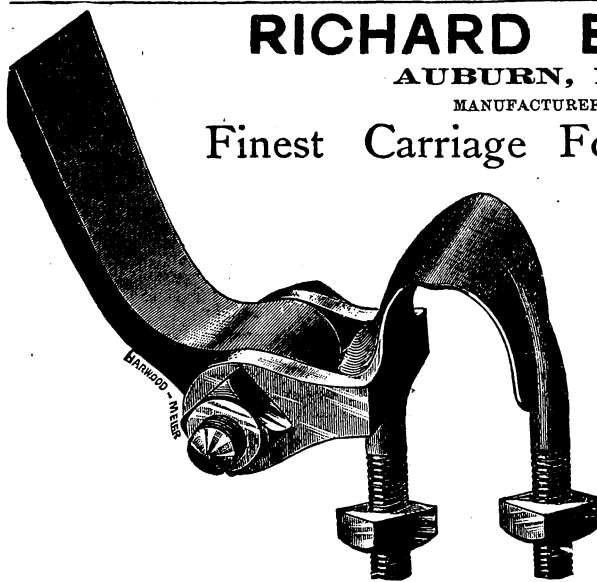
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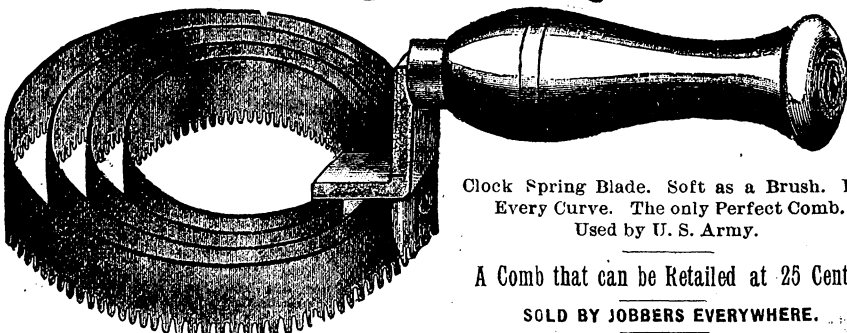
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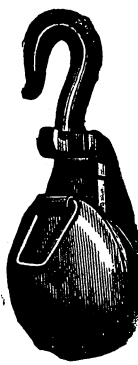
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ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

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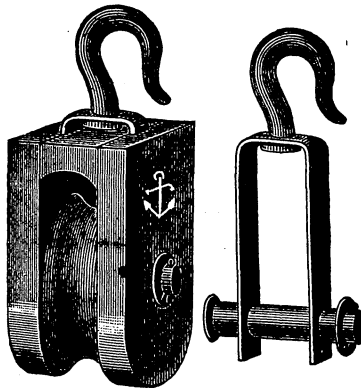
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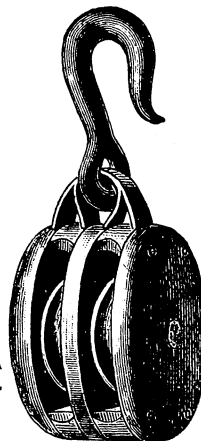
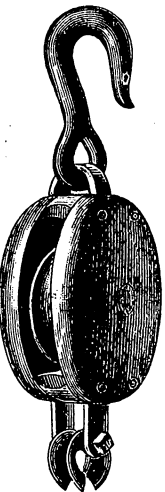
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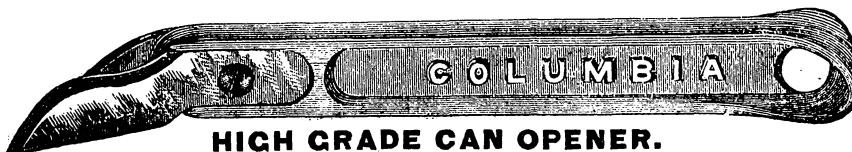


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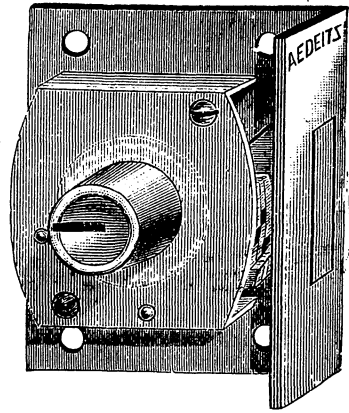
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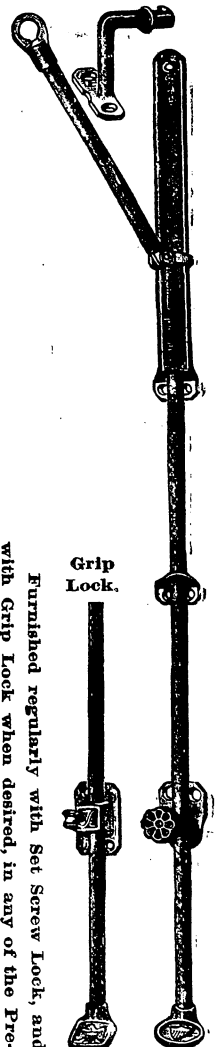
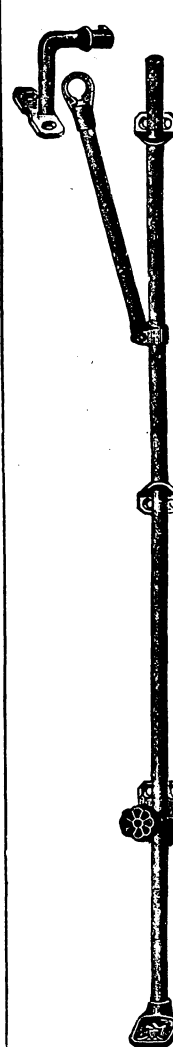
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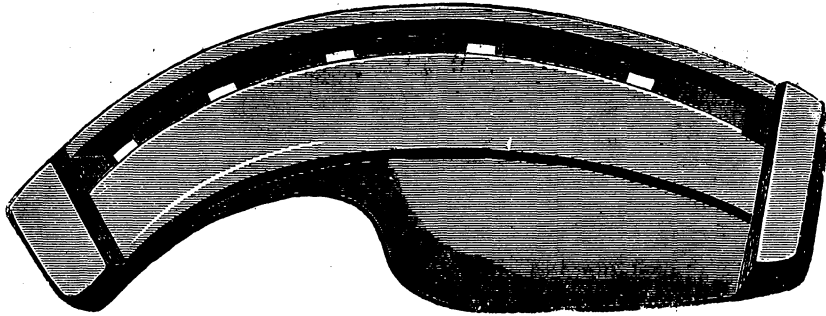
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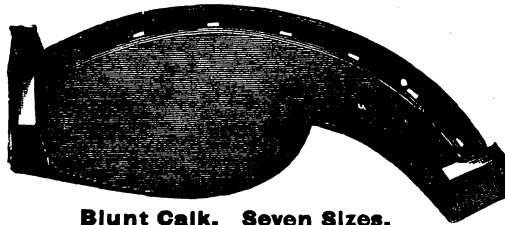


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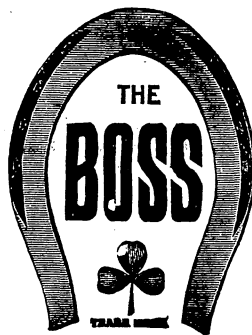
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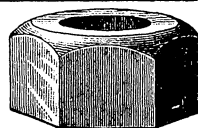
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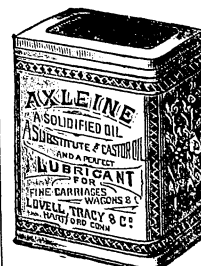
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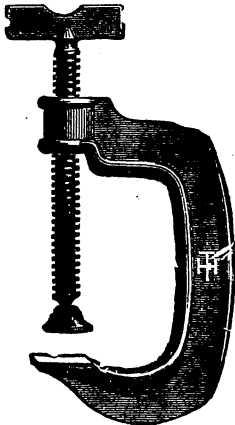
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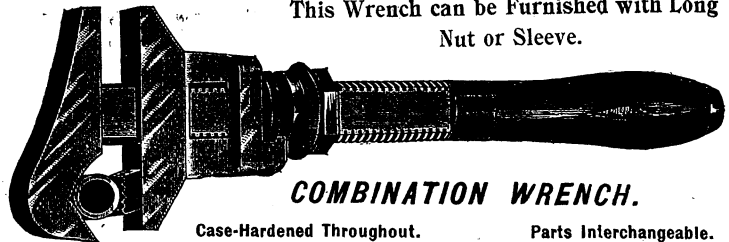
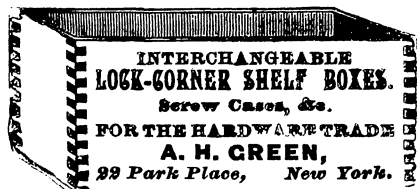
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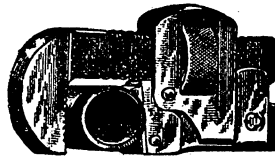
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Case-Hardened Throughout.

Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal. For Circulars and Price-List, address

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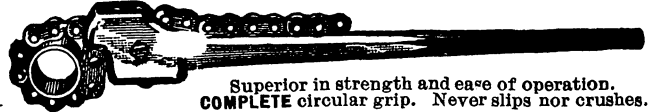
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Forged Steel.

All parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

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Superior in strength and ease of operation. COMPLETE circular grip. Never slips nor crushes.

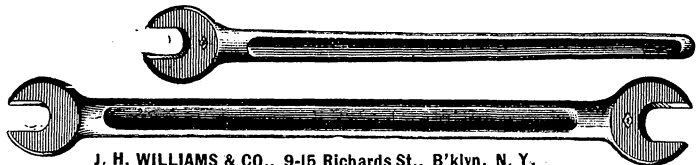
Can be used with one hand and in closer quarters than any other Basin Wrench. Parts interchangeable.



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100 Sizes.



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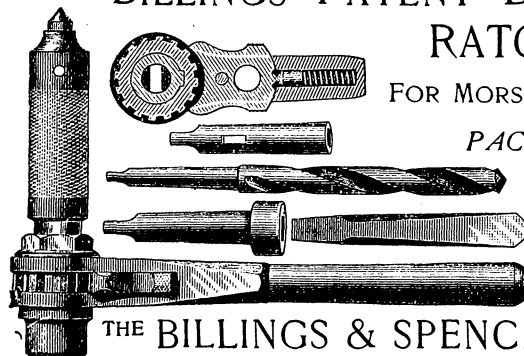
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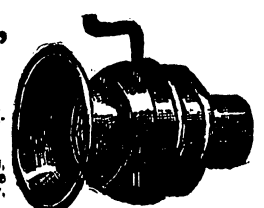
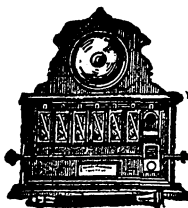
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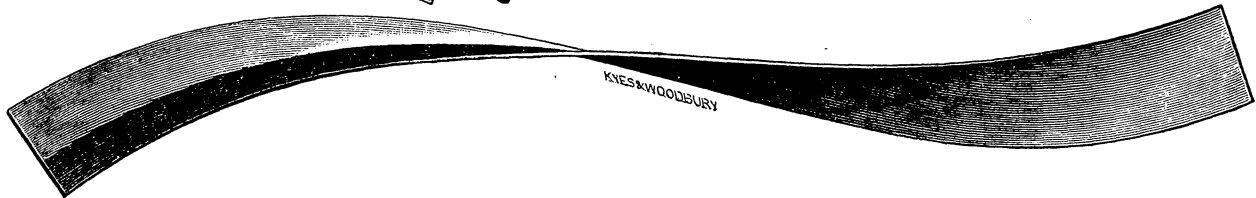
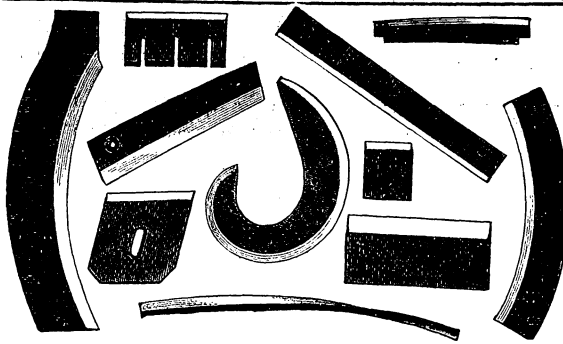
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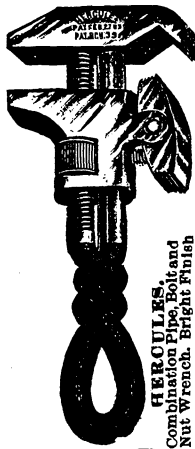
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Combination Pipe, Bolt and
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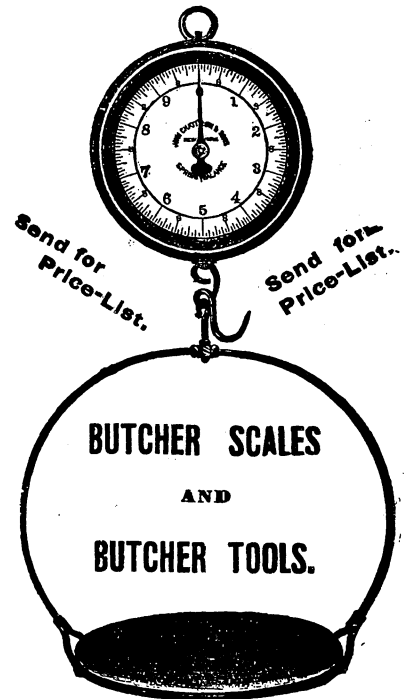
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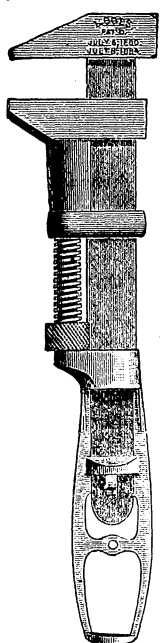


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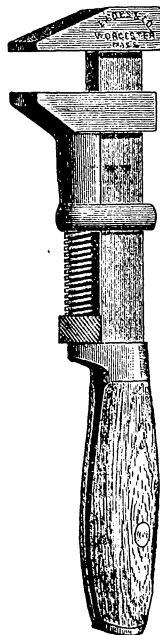
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Screw Wrenches

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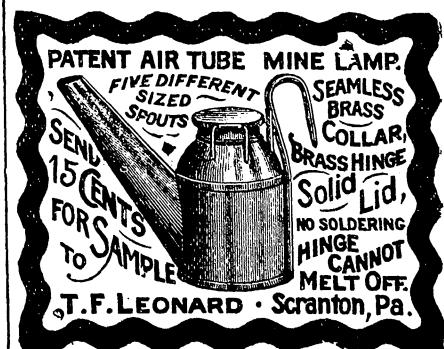


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FOR ANTHRACITE AND
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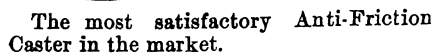
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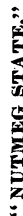


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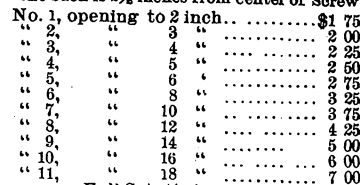
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"The Old Reliable." Best, Cheapest.

Sash work as with weights. Prices: 65c., 80c. and \$1.00 per set of four. Liberal discounts.

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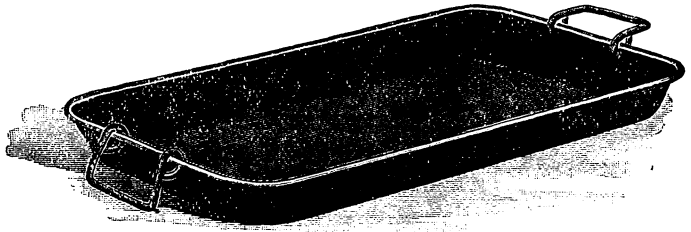
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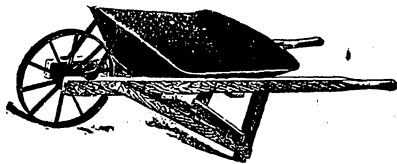
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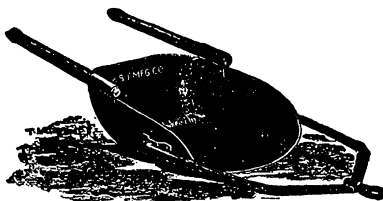


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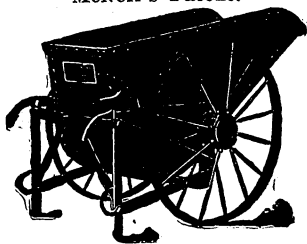
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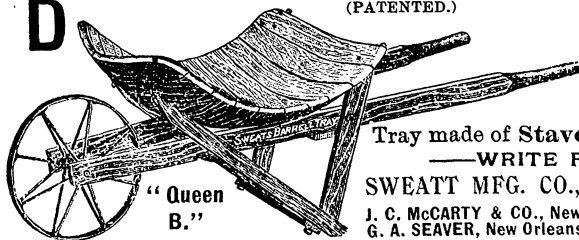


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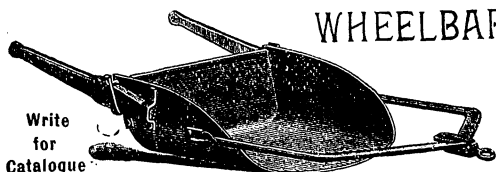
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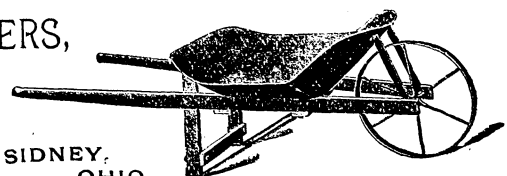
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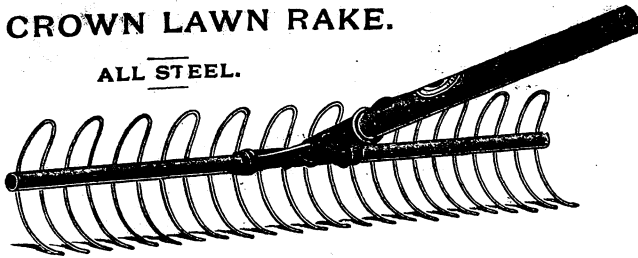
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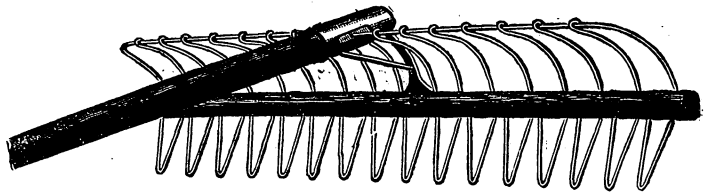
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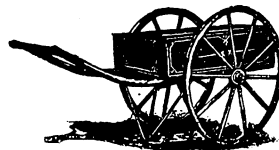
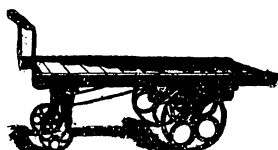
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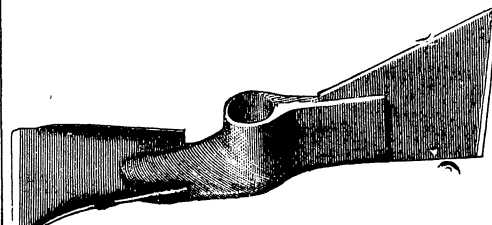
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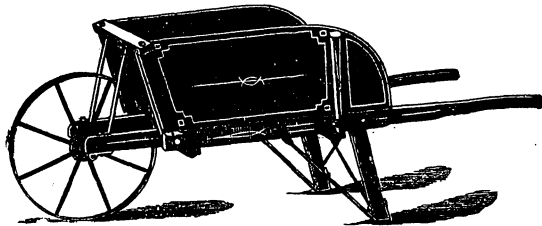
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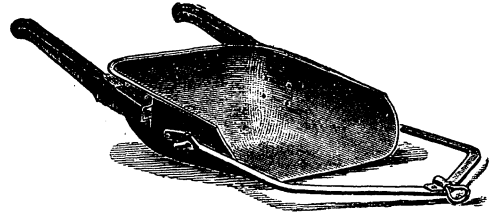


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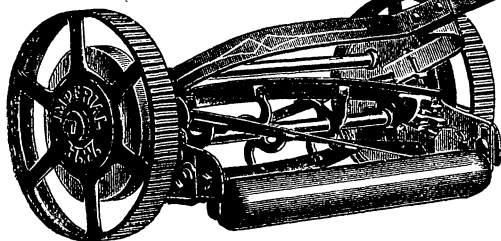
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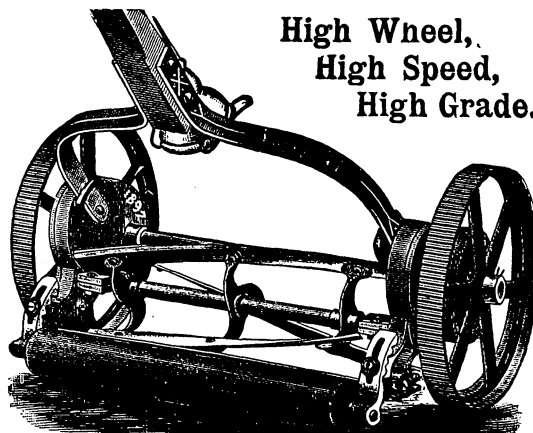
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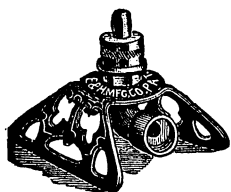
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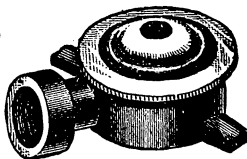


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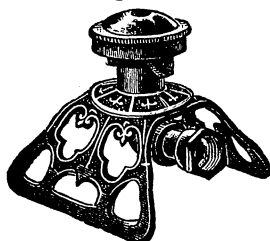


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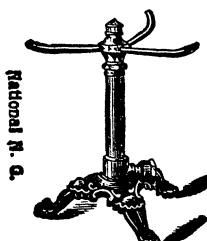


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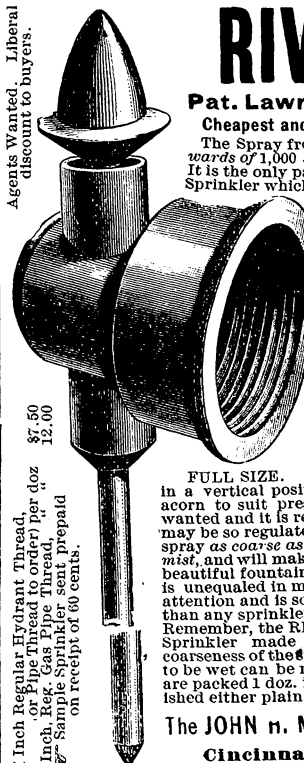
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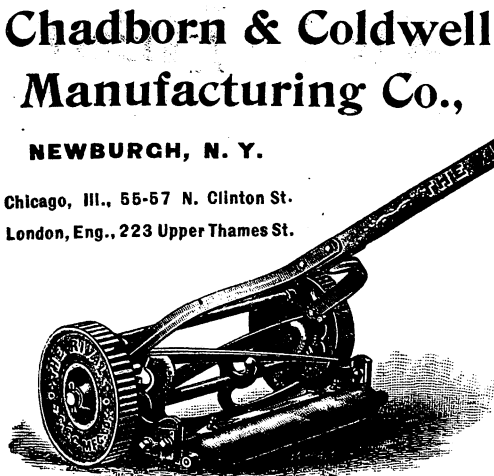
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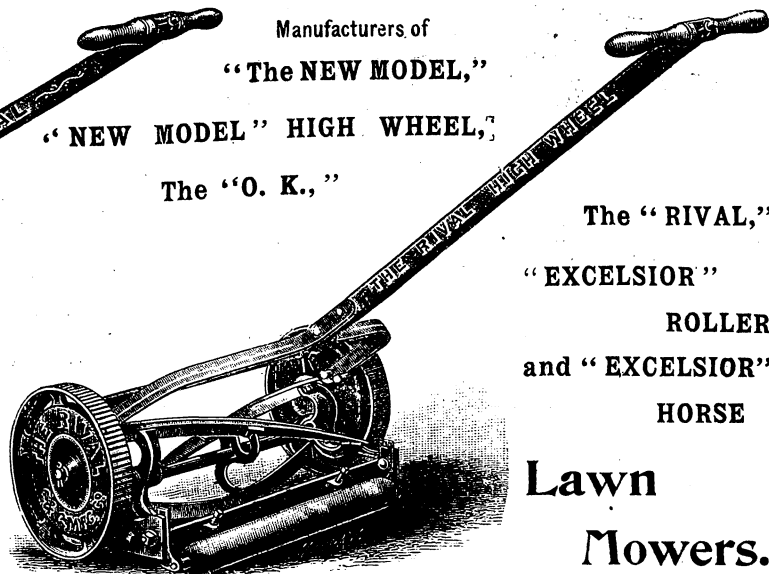
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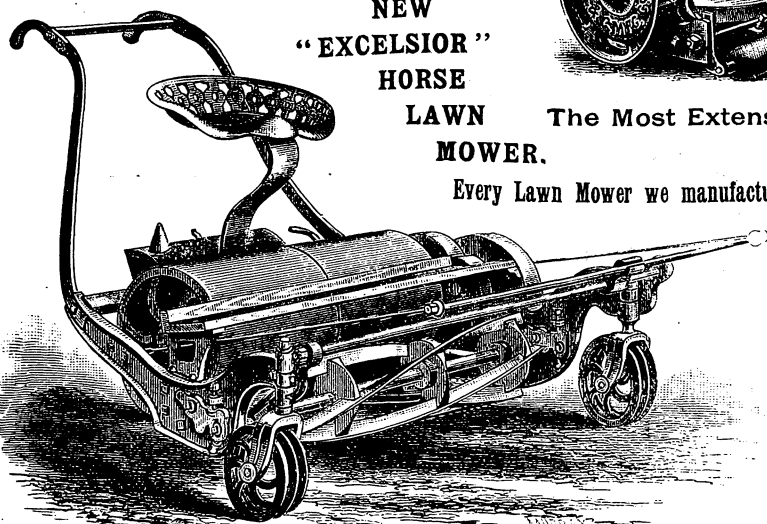
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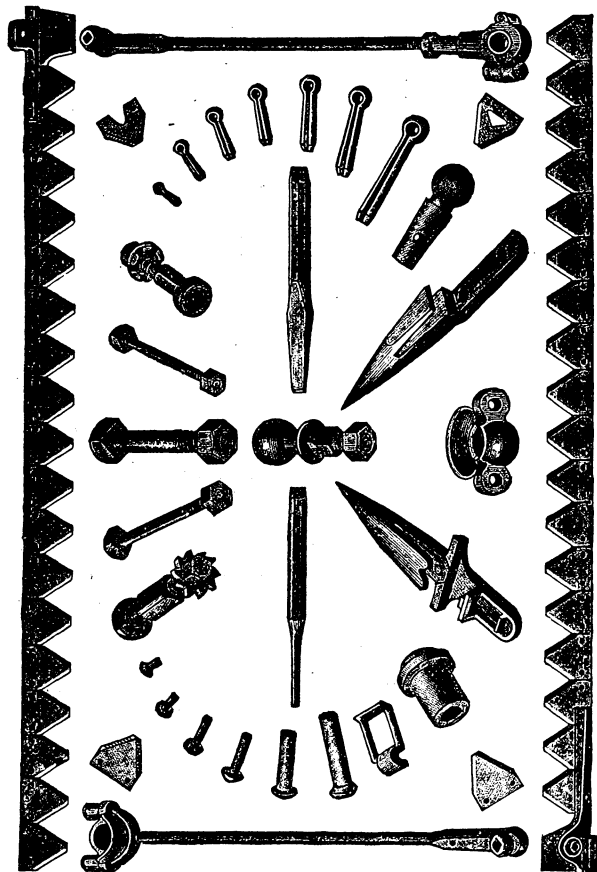
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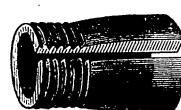
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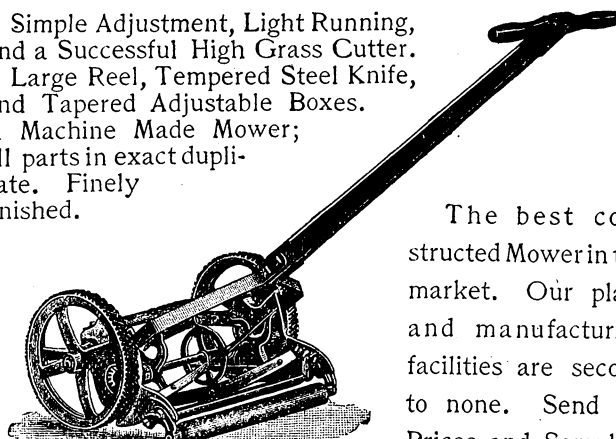
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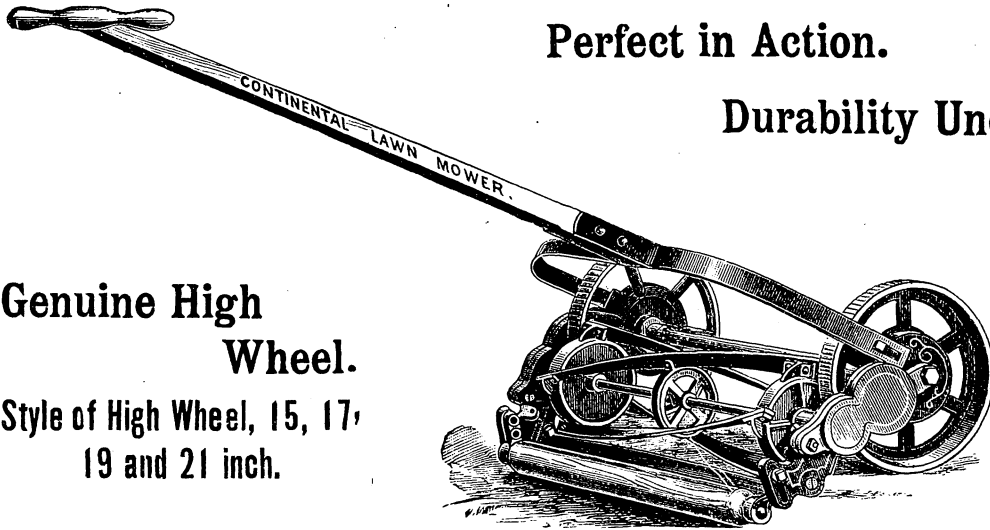
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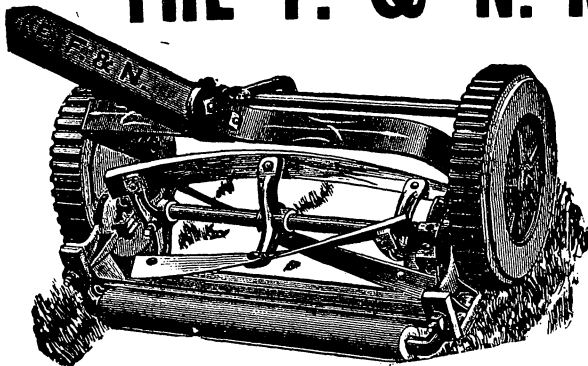
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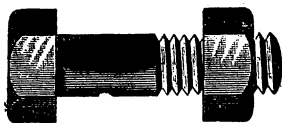
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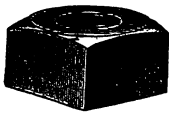
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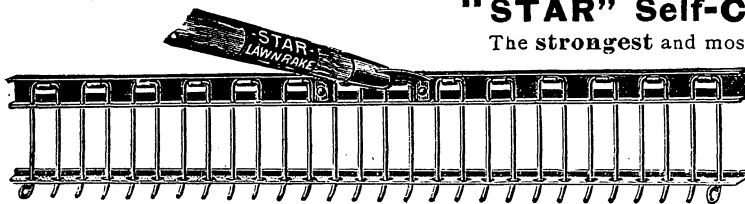
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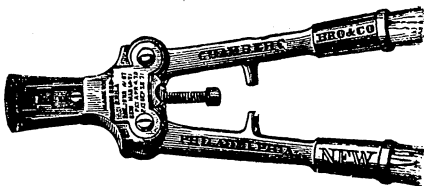
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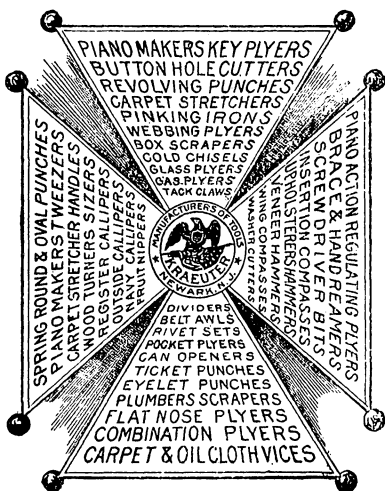
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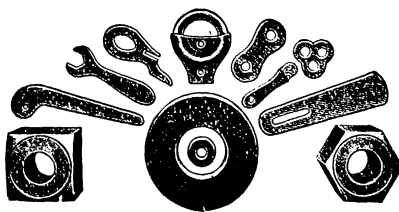
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Band Drill Co., 23 Park Place, N. Y.
- Air Moving Machinery.**
Howard & Morse, 45 Fulton, N. Y.
- Aluminum, Brass and Bronze.**
Cowles Electric Smelting & Aluminum Co., Lockport, N. Y.
Gaylord, F. L. Co., Ansonia, Conn.
Haight & Clark, Albany, N. Y.
Pittsburgh Reduction Co., Pittsburgh, Pa.
St. Louis Bronze & Aluminum Works, St. Louis, Mo.
Seovill Mfg. Co., Waterbury, Conn.
Waldo & Stout, Bridgeport, Conn.
Illinois Pure Aluminum Co., Lemont, Ill.
- Analytical Chemists.**
Britton, J. Blodgett, Philadelphia, Pa.
Hunt, Robt. W. & Co., Chicago, Ill.
Moore, Dr. Gideon E., 221 Pearl St., N. Y.
- Anti-Friction Metals.**—See *Babbitt Metal*
- Anvil and Vise (Combination).**
Fulton Iron & Engine Works, Detroit, Mich.
- Arms and Ammunition.**
Forehand Arms Co., Worcester, Mass.
Hartley & Graham, 313 & 315 Broadway, New York.
Stevens, J. Arms and Tool Co., Chicopee Falls, Mass.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.
- Auctioneers.**
Haydock & Bissell, N. Y.
- Axes.**
Peck, A. G. & Co., Cohoes, N. Y.
- Axle Grease.**
Lovell, Tracy & Co., Hartford, Conn.
- Axles, Springs, &c. Manufacturers of.**
Bettendorf Hollowsteel Axle Works, Davenport, Ia.
Gaudier Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Wurster, F. W., Brooklyn, N. Y.
- Babbitt Metal.**
Crown Smelting Co., Chester, Pa.
Day Metal Co., St. Louis, Mo.
Eastwood Wire Mfg. Co., Belleville, N. J.
Hiertz, T. & Son, St. Louis, Mo.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
Reeves, Paul S., Philadelphia, Pa.
Shaw, Luther & Son, Worcester, Mass.
- Bakers and Roasters.**
Bronson Supply Co., Cleveland, Ohio.
- Bale Ties.**
Kilmer Mfg. Co., Newburg, N. Y.
- Band Saw Machines.**
Cross & Speirs Machine Co., Waterbury, Conn.
- Band Saws.**
Atkins, E. C. & Co., Indianapolis, Ind.
- Barb Wire and Fence.**
Consolidated Steel & Wire Co. St. Louis, Mo.
Gaudier Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Washburn & Moen Mfg. Co., Worcester, Mass.
- Bar Iron, Manufacturers of.**
Atina Iron & Steel Co., Bridgeport, O.
Allentown Rolling Mill, Philadelphia, Pa.
Burden Iron Co., Troy, N. Y.
Montour Iron & Steel Co., Danville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Sternbergh, J. R. & Son, Reading, Pa.
- Bellows, Manufacturers of.**
Bullock Bellows Co., Cleveland, O.
Scott, Geo. M., Chicago, Ill.
- Bells.**
Bevin Bros. Mfg. Co., East Hampton, N. Y.
- Belt Dressing.**
Joe. Dixon Crucible Co., Jersey City, N. J.
- Belt Fasteners.**
Bristols' Mfg. Co., Waterbury, Conn.
Claffen Mfg. Co., Cleveland, Ohio.
Talcott, W. O., Providence, R. I.
- Belted, Makers of.**
Alexander Bros., 413 N. 3d., Phila.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
N. Y. Belting & Packing Co., Ltd., N. Y.
Roberts Mfg. Co., Pittsburgh, Pa.
Shultz Belting Co., St. Louis, Mo.
- Bicycles.**
Bidwell, Geo. R. Cycle Co., 310 W. 59th Street, N. Y.
Bingham, W. Co., Cleveland, Ohio.
Common Sense Bicycle Mfg. Co., Phila.
Coventry Machine Co., Ltd., Boston, Mass.
Hubert Bros. & Co., 23 W. 23d St. N. Y.
Lovell, Jno. P. Arms Co., Boston, Mass.
Marble Cycle Mfg. Co., Plymouth, Ind.
Monarch Cycle Co., Chicago, Ill.
Pope Mfg. Co., Boston, Mass.
Read, Wm. & Sons, Boston, Mass.
Rouse-Duval Cycle Co., Peoria, Ill.
Western Wheel Works, Chicago, Ill.
- Bits and Braces.**
Am. Bit Brace & Tool Co., Buffalo, N. Y.
Backus Mfg. Co., Williamsport, Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Jennings, C. E. & Co., 97 Chambers, N. Y.
- Blocks, Tackle, Makers of.**
Boston & Lockport Block Co., Boston, Mass. and Lockport, N. Y.
Cleveland Block Co., Cleveland, O.
Fulton Iron & Engine Works, Detroit, Mich.
Shubert & Cottingham, Philadelphia, Pa.
Toledo Block Works, Toledo, O.
- Blowers.**
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. & Co., Boston, Mass.
- Boiler Makers' Rolls.**
New Doty Mfg. Co., Janesville, Wis.
- Boiler Plates.**
Carbon Steel Co., Pittsburgh, Pa.
McIlvain, Wm. & Sons, Reading, Pa.
Lukens Iron & Steel Co., Coatsville, O.
Pottstown Iron Co., Pottstown, Pa.
- Sellers, Copper.**
Randolph & Clowes, Waterbury, Conn.
- Sellers, Steam.**
Babcock & Wilcox Co., 80 Cortlandt, New York.
Harrison Safety Boiler Wks., Phila., Pa.
Phoenix Iron Works Co., Meadville, Pa.
Pollock, W. B. & Co., Youngstown, O.
Southwark Fdy. & Mch. Co., Phila., Pa.
Wetherill, Robt. & Co., Chester, Pa.
- Bolt Cutters.**
Chambers Bros. Co., Philadelphia, Pa.
Howard Iron Works, Buffalo, N. Y.
Wells Bros. Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Books.**
Lamberson, B., Portland, Ore.
Williams, David, 90-102 Reade N. Y.
Wolcott & West, Syracuse, N. Y.
- Box Bander.**
Goodell & Harding, Burlington, Vt.
- Boxes, Hdw. Shelf, &c.**
Green, A. H., 23 Park Place, N. Y.
Jones, Jesse & Co., Philadelphia, Pa.
- Box Straps and Corners.**
Buffalo Specialty Mfg. Co., Buffalo, N. Y.
- Brake Shoes.**
Sargent Co., Chicago, Ill.
- Brass, Manufacturers of.**
Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Holmes, Booth & Haydens, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass and Copper Wks., Rome, N. Y.
Seovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 296 B'way, N. Y.
- Brass Butt Hinges.**
Tiebout, W. & J., 16 & 18 Chambers
- Brass Foundries.**
Cramp, Wm. & Sons, S & E. B. Co., Philadelphia, Pa.
Emory, P. P. Mfg. Co., Springfield, Mass.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
Nuth Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia, Pa.
Shaw, Luther & Son, Worcester, Mass.
- Brass Goods.**
Brass Goods Mfg. Co., 88 Chambers
- Bridge Builders.**
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Wrought Iron Bridge Co., Canton, O.
- Bronze (Tobin).**
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.
- Builders' Hardware.**
Deitz, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Warner Lock Co., Chicago, Ill.
Yale & Towne Mfg. Co., Stamford, Ct.
- Butcher and Shoe Knives, Manufacturers of.**
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.
- Butts and Hinges.**
McKinney Mfg. Co., Alleghany, Pa.
Sabin Machine Co., Montpelier, Vt.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.
- Calipers and Dividers.**
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.
- Can Makers' Tools and Machines.**
Niagara Stamping and Tool Co., Buffalo, N. Y.
- Can Openers.**
Meisselbach, A. F. & Bro., Newark, N. J.
- Car Axles.**
Roberts, A. & P. & Co., Phila.
- Carboy Stands.**
Hillebrand & Wolf, Philadelphia, Pa.
- Car Wheels.**
Whitney, A. & Sons, Phila.
- Carriage Hardware, Makers of.**
Covert's Saddlery Works, Farmer, N. Y.
Eccles, Richard, Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantville, Conn.
Wilcox & Howe Co., Birmingham, Conn.
- Cartridge Reloading Tools.**
Ideal Mfg. Co., New Haven, Conn.
- Casters, Wheel, &c.**
Clark, G. P., Windsor Locks, Conn.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Castings, Iron and Steel.**
Ames Sword Co., Chicopee, Mass.
Arcade Malleable Iron Co., Worcester, Mass.
Ashman Steel Casting Co., Thurlow, Pa.
Booth, The Lloyd Co., Youngstown, O.
The Burr & Houston Co., Brooklyn, N. Y.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Cheney, S. & Son, Manlius, N. Y.
- Chester Steel Casting Co., Phila.**
Chrome Steel Works, Brooklyn, N. Y.
Ette & Henger Mfg. Co., St. Louis, Mo.
Eureka Cast Steel Co., Chester, Pa.
Flagg, Stanley G. & Co., Phila.
Haight & Clark, Albany, N. Y.
Hammer & Co., Bradford, Conn.
Herrick, J. A., 284 Pearl St., N. Y.
Johnson Foundry Co., Johnstown, Pa.
Johnson, I. G. & Co., Spuyten Duyvil, N. Y.
Mahoning Fdy. & Mch. Co., Danville, Pa.
New Castle Steel Casting Co., New Castle, Pa.
Norristown Steel Co., Norristown, Pa.
Northwest Malleable Iron Co., Milwaukee, Wis.
Palmer & De Mooy, Cleveland, O.
Passalo Art Casting Co., Passalo, N. J.
Penn. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Prest & Letchworth, Buffalo, N. Y.
Sargent Co., Chicago, Ill.
Sessions Foundry Co., Bristol, Conn.
Shepard Hdw. Co., Buffalo, N. Y.
Shickler, Harrison & Howard Iron Co., St. Louis, Mo.
Spencer's, I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O.
Standard Steel Casting Co., Thurlow, Pa.
Syracuse Steel Foundry, Syracuse, N. Y.
Taylor Iron & Steel Co., High Bridge, N. J.
Totten & Hogg, Iron & Steel Fdy Co., Pittsburgh, Pa.
Trenton Mal. Iron Co., Trenton, N. J.
Union Mfg. Co., 103 Chambers St., N. Y.
Wetherill, Robt. & Co., Chester, Pa.
- Chains.**
Bradlee & Co., Philadelphia, Pa.
Bridgeport Chain Co., Bridgeport, Conn.
Link-Belt Engineering Co., Phila. a.
McKay, Jas. & Co., Pittsburgh, Pa.
- Cherry Toners.**
Goodell Co., Antrim, N. H.
- Chimneys.**
Phila. Engineering Works, Phila., Pa.
- Chisels, Manufacturers of.**
Buck Bros., Milbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.
- Chucks.**
Cushman Chuck Co., Hartford, Conn.
Graham Twist Drill & Chuck Co., Detroit, Mich.
Hogson & Pettis Mfg. Co., New Haven, Conn.
Horton, E. & Sons Co., Windsor Locks, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Skinner Chuck Co., New Britain, Conn.
Union Mfg. Co., 103 Chambers, N. Y.
Walton, D. E. Mach. Co., New London, Conn.
- Clamps.**
Hammer & Co., Bradford, Conn.
Le Count, C. W., So. Norwalk, Conn.
- Clothing Machines.**
Hitchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 25 Warren St.
- Clock Springs, Manufacturers of.**
Haley Mfg. Co., Concord, N. H.
- Coal.**
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.
- Coke.**
Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Sibbel, Geo. H. & Co., Chicago, Ill.
Wister, Francis, Philadelphia, Pa.
- Collection.**
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.
- Condensers.**
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.
- Conveying Machinery.**
Brown Holsing & Conveying Machine Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.
- Copper.**
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass and Copper Works, Rome, N. Y.
Wister, Francis, Philadelphia, Pa.
- Coppersmiths.**
Emory, P. P. Mfg. Co., Springfield, Mass.
- Cordage.**
Elizabethport Cordage Co., 46 South, Samson Cordage Works, Boston, Mass.
Travers Bros. Co., 107 Duane St., N. Y.
- Cork Screws.**
Detroit Cork Screw Co., Detroit, Mich.
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Corrugated Furnaces.**
Continental Iron Wks., Brooklyn, N. Y.
- Corrugated Iron.**
Cambridge Roofing Co., Cambridge, O.
Moseley Iron Bridge & Roof Co., 5 Day, N. Y.
- Counting Machines.**
Osborn, G. Edw. & Co., New Haven, Ct.
- Coupling.**
Almond, T. R., Brooklyn, N. Y.
- Coverings, Boiler and Pipe.**
Johns, H. W. Mfg. Co., 87 Maiden Lane.
- Cranes.**
Allentown Rolling Mills, Allentown, Pa.
Detroit Foundry Equipment Co., Detroit, Mich.
Marla & Beekley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatsville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford, Conn.
- Cupolas, Hot-Blast.**
Colliau, Victor, Detroit, Mich.
Detroit Fdry. & Equipment Co., Detroit, Mich.
- Curry Combs.**
Amer. Curry Comb Co., Troy, N. Y.
Kohler, F. E. & Co., Canton, O.
Noyes, B. B. & Co., Greenfield, Mass.
Spring Curry Comb Co., So. Bend, Ind.
- Cutlery Cases.**
Torrey, J. A. & Co., Worcester, Mass.
- Cutlery, Importers of.**
Gurney, Fred B., 113 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Cutlery, Manufacturers of.**
Curley, J. & Bro., 6 Warren St., N. Y.
Dame, Stoddard & Kendall, Boston, Mass.
Electric Cutlery Co., 113 Chambers, N. Y.
Goodell Co., Antrim, N. H.
Landers, Frary & Clark, New Britain, Conn.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.
- Dipper Handles.**
Rome Novelty Mfg. Co., St. Louis, Mo.
- Dog Collars.**
Chapman Mfg. Co., Meriden, Conn.
- Door Checks.**
Utility Door Check Co., Chicago, Ill.
- Door Knobs.**
Bardsley, J., 149 & 151 Baxter St., N. Y.
- Drilling Machines.**
Boynston & Plummer, Worcester, Mass.
Brady Mfg. Co., Brooklyn, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Burnham, Geo. & Co., Worcester, Mass.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. L., New Haven, Conn.
Clough, R. M., Tolland, Conn.
Culver, Thos. H. & Co., Philadelphia, Pa.
Dwight Slate Machine Co., Hartford, Conn.
Halsey, Jas. T., Philadelphia, Pa.
Illinois Iron and Bolt Co., Carpentersville, Ill.
Norton & Jones Machine Tool Works, Plainville, Conn.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Smith Friction Drill & Tool Co., Boston, Mass.
- Drop Forgings.**
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Boone, W. C. Mfg. Co., Boonton, N. J.
Eccles, Richard, Auburn, N. Y.
Herbrand Co., Fremont, O.
Merrill Bros., 28 First, Brooklyn, E. D.
Miner & Peck Mfg. Co., New Haven, Ct.
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spears, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmut & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.
- Drop Presses.**
Bliss, E. W. & Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Eaton, Geo. H. & Co., Boston, Mass.
Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.
- Dumb Waiters.**
Storm Mfg. Co., Newark, N. J.
- Dynamite.**
New York Powder Co., 62 Liberty St., N. Y.
- Dynamos.**
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levy Chemical Co., 10 to 14 Grand St., N. Y.
- Edge Tools, Makers of.**
Buck Bros., Milbury, Mass.
Butcher, W. & Co., 135 Duane St., N. Y.
Buffalo Edge Tool Wks., Buffalo, N. Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.
- Egg Beaters.**
North Bros. Mfg. Co., Philadelphia, Pa.
- Electric Bells and Supplies.**
Ostrander, W. R. & Co., New York.
Wollensak, J. F., Chicago, Ill.
- Electric Welding.**
Thomson Electric Welding Co., Boston, Mass.
- Electro-Platers.**
Boardman, L. & Son, East Haddam, Ct.
- Elevators, Makers of.**
Link-Belt Engineering Co., Phila., Pa.
Moline Elevator Co., Moline, Ill.
Morse, Williams & Co., Phila., Pa.
Salem Fdy. & Mch. Co., Salem, Mass.
- Emery Wheels.**
Bell, Geo. E., 36 John St., N. Y.
Grant Corundum Wheel Mfg. Co., Chester, Mass.
Hamden Corundum Wheel Co., Springfield, Mass.
Michigan Emery Wheel Co., Detroit, Mich.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Emery Wheel Mfg. Co., Bridgeport, Conn.
Waltham Emery Wheel Co., Waltham, Mass.

See Alphabetical Index, Page 116.

- Enamels.**
Nubian Iron Enamel Co., Cragin Ill.
- Engineers and Contractors.**
Alken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Brady Mfg. Co., Brooklyn, N. Y.
Carter, Henry J., Pittsburgh, Pa.
Curtis, Gram, Pittsburgh, Pa.
Herick, J. A., 234 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R. Co., Pittsburgh, Pa.
Leofred, A., Quebec, Can.
McClure, Amel & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineers, Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Wilkie, Bothwell & Co., Ltd., Pittsburgh, Pa.
- Engines, Gas.**
Otto Gas Engine Works, Phila., Pa.
- Engines, Steam, Makers of.**
Buckeye Engine Co., Salem, O.
Cleveland & Harwick, Erie, Pa.
Lefell, W. C. Co., Springfield, O.
Norwalk Iron Works Co., So. Norwalk, Conn.
Shipman Engine Co., Boston, Mass.
Southward Foundry and Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.
- Exhaust Tumblers.**
Sweeter, W. A., Brockton, Mass.
- Expansion Bolts.**
Boone, W. C. & Son, Brooklyn, N. Y.
Church, Isaac, Toledo, O.
- Faucets, Self-Measuring.**
Lane Bros., Poughkeepsie, N. Y.
- Faucets, Wooden, Makers of.**
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.
- Feed-Water Heaters.**
Berriman, Jas., Philadelphia, Pa.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Phila., Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.
- Fencing, Iron and Wire.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., Hartman Mfg. Co., Beaver Falls, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire Works Co., Milwaukee, Wis.
- Files, Importers of.**
Moess, F. W., 80 John, N. Y.
- Files and Rasps, Manufacturers of.**
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
Butcher, W. & S., 135 Duane St., N. Y.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.
- Fire Brick, Makers of.**
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jos. & Son, Cumberland, Md.
Kreischer B & Sons, Foot E. Houston, St. Maurer, E. & Son, 420 E. 23d, N. Y.
Renovo Fire Brick and Clay Co., Phila.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro., Woodbridge.
- Fire Sets.**
Troy Nickel Works, Troy, N. Y.
- Fishing Tackle.**
Dane, Stoddard & Kendall, Boston, Mass.
Enterprise Mfg. Co., Akron, O.
- Flint and Emery Paper.**
Bader, Adamson & Co., Phila., Pa.
- Fodder Cutters.**
Silver Mfg. Co., Salem, O.
- Forges, Portable, &c.**
Bradley & Co., Syracuse, N. Y.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.
- Forgings, Iron and Steel.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.
- Foundry Facings.**
Chicago Fdy. Supply Co., Chicago, Ill.
MacKellar Foundry Facing & Supply Co., Quincy, Ill.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.
Whitehead Bros. Co., 517 W. 16th St.,
- Foundry Riddles.**
Estey, W. S. 65 Fulton, N. Y.
- Foundry Supplies.**
Chicago Fdy. Supply Co., Chicago, Ill.
Colliau, Victor, Detroit, Mich.
MacKellar Fdy. Facing & Supply Co., Quincy, Ill.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cin., O.
Whitehead Bros. Co., 517 W. 16th St.,
- Friction Clutches.**
Moore & White Co., Philadelphia, Pa.
- Fruit Presses.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Fuel Burners.**
Collins, W. S., 46 Drexel Bldg., N. Y.
- Garden Tools.**
Noyes, B. B. & Co., Greenfield, Mass.
- Gas Producers.**
Wood, R. D. & Co., Philadelphia, Pa.
- Gas & Steam Fitters' Supplies.**
Pancoast & Maule, Phila., Pa.
- Gear Cutters.**
T. E. Whiton Mach. Co., New London, Conn.
- Gears.**
Boston Gear Works Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
New Process Raw Hide Co., Syracuse, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Union Fdy. & Mch. Co., Pittsburgh, Pa.
- Glass Tubes.**
Ashcroft Mfg. Co., 111 Liberty St., N. Y.
- Glass Cutters.**
Monce, S. G., Bristol, Conn.
- Gle.**
Bader, Adamson & Co., Phila., Pa.
Leggett & Bros., 301 Pearl St., N. Y.
Quassa Cement Co., Worcester, Mass.
- Grinding and Polishing Machinery.**
Norton Emery Wheel Co., Worcester, Mass.
Wasburn Shops, Worcester, Mass.
- Grindstone Dressing Machinery.**
Blake & Johnson, Waterbury, Conn.
- Grindstones.**
Cleveland Stone Co., Cleveland, O.
Huron Grindstone Co., Port Austin, Mich.
- Gunpowder, Makers of.**
Lafin & Rand Powder Co., N. Y.
- Hand Carts.**
Lansing Wheelbarrow Co., Lansing, Mich.
- Handles.**
New Process Raw Hide Co., Syracuse, N. Y.
New York Mallet and Handle Wks., 456 E. Houston St., N. Y.
- Hangers, Door.**
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.
- Hardware Comm'n Merchants.**
Doshier, Martin, 88 Chambers, N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Manufacturers.**
Hotchkiss, E. S. Bridgeport, Conn.
Searns, E. G. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.
- Hardware Mfrs. Agents.**
Bingham, W. Co., Cleveland, O.
Gramam, John H. & Co., 113 Chambers, McCoy, Jos. F. Co., 28 Warren St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
Supless, Dunn & Alder, 97 Chambers St., New York.
Underhill, Clinch & Co., 94 Chambers St., N. Y.
- Hardware Specialties.**
Acme Shear Co., Bridgeport, Conn.
Bailey, F. E. & Co., Chicago, Ill.
Beiden Machine Co., New Haven, Conn.
Cleveland Fdy. Co., Cleveland, O.
Ellis, Geo. D. & Sons Co., Philadelphia Pa.
- Empire Portable Forge Co., Lansingburg, N. Y.**
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Hart, H. C. Mfg. Co., Detroit, Mich.
Henn, A. S. & Co., New Haven, Conn.
Home Novelty Mfg. Co., St. Louis.
North Bros. Mfg. Co., Philadelphia, Pa.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 113 Chambers St., N. Y.
Wire Goods Co., Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y.
- Hardware, Yacht and Ship.**
Ferdinand, L. W. & Co., Boston, Mass.
- Harness Snaps.**
Covert Mfg. Co., West Troy, N. Y.
Cover's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
- Hay Knives.**
Holt, Hiram, Co., E. Wilton, Me.
- Holting Machines.**
Box, Alfred & Co., 314 Green, Phila.
Jrow, Holisting & Conveying Mch. Co., Cleveland, O.
Coveland Bacon, 85 Liberty St., N. Y.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 98 Liberty, N. Y.
Marls & Beckley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
- Hollow-Ware.**
Bronson Supply Co., Cleveland, Ohio.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speldel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.
- Hollowware, Aluminum.**
Illinois Pure Aluminum Co., Lemont, Ill.
- Horse and Barbers' Clippers.**
Hotchkiss, E. S., Bridgeport, Conn.
- Horse Nails, Makers of.**
National Horse Nail Co., Vergennes, Vt.
- Horse Shoes, Makers of.**
Bryden Horse Shoe Co., Catsauqua, Pa.
Burden Iron Co., Troy, N. Y.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Standard Horse Shoe Co., Boston, Mass.
The Burden Iron Co., Troy, N. Y.
- Hose.**
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.
- Hose Menders.**
Hudson, C. E. & Co., Leominster, Mass.
- Hotels.**
The Audubon, Chicago, Ill.
- Hydrants, &c.**
McLean, John, 296 & 298 Monroe, N. Y.
- Hydraulic Jacks.**
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.
- Ice-Cream Freezers.**
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
Shepard Hdw. Co., Buffalo, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
White Mountain Freezer Co., Nashua, N. H.
- Ice Shavers.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Injectors.**
Jenkins Bros., New York
- Insurance, Boiler.**
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**
Lundberg, Gustaf, Boston, Mass.
Mills, A. & Co., 1 Broadway, N. Y.
Page, Newell & Co., Boston, Mass.
- Iron Commission Brokers.**
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lee, J. Tammal & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Mann, E. R. & Co., Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.
- Iron Ore.**
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.
- Iron, Merchants.**
Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Cotton, Bradley & Co., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Navlor & Co., 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St., N. Y.
Paxson, J. W. & Co., Boston, Mass.
Pickands, Brown & Co., Chicago, Ill.
Pierson & Co., 24-27 West, N. Y.
Richards, D. W. & Co., 88 Mangin St., N. Y.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
- Iron, Importers.**
Abbott, Jere & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
- Iron, Sheet, Manufacturers of.**
Etta Iron & Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lim., McKeesport, Pa.
- Ironwork, Ornamental.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**
Wollensak, J. F., Chicago, Ill.
- Ladders.**
Davies, Chas. & Co., Williamsport, Pa.
- Ladies.**
Detroit Fdy. Equipment Co., Detroit, Mich.
- Lamp Stoves.**
Cleveland Foundry Co., Cleveland, O.
- Lanterns.**
Dietz, R. E. & Co., 60 Lighthouse St., N. Y.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Lathes.**
Millers Falls Co., 98 Reads, N. Y.
Sebastian Lathe Co., Cincinnati, O.
Sebastian, May & Co., Sidney, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Wire.**
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Lawn Matted.**
Railway Speed Recorder Co., Kent, O.
- Lawn Mowers.**
Blanchard, W. Co., Cleveland, O.
Blanchard, W. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Graham, Passmore & Co., Phila., Pa.
Horton, M. O., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foss & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila., Pa.
Surplus, Dunn & Alder, 97 Chambers St., N. Y.
Wilson Whiteley & Co., Springfield, O.
- Lawn Rakes.**
Gibbs Mfg. Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse, N. Y.
- Lawn Sprinklers.**
Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis.
McGowan, John H. Co., Cincinnati, O.
- Lawn Sweepers.**
Lape, W. E., Syracuse, N. Y.
- Lawn Swings.**
Davies, Chas. & Co., Williamsport, Pa.
- Lemon Squeezers.**
Ripley Mfg. Co., Unionville, Conn.
- Letter Boxes.**
Merriam Mfg. Co., Durham, Conn.
- Letters, Paper.**
Tablet & Ticket Co., Chicago, Ill.
- Levels.**
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.
- Locks & Knobs, Manufacturers of.**
Deitz, A. E., 97 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Sargent & Co., 37 Chambers St., N. Y.
Smith & Egg Mfg. Co., Bridgeport, Conn.
Warner Lock Co., Chicago, Ill.
Yale & Towne Mfg. Co., Stamford, Conn.
- Lubricators.**
Wadham's Oil & Grease Co., Milwaukee, Wis.
- Machinery.**
Am. Tool Works, Cleveland, Ohio.
Anthracite Brass Wks., Tamaqua, Pa.
Barnes, W. R. & John Rockford, Ill.
Becker, Jno. Mfg. Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 46 Poy, N. Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence, R. I.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cruikshank, D. B., Providence, R. I.
Davis, W. P., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Harrington, E. Son & Co., Phila.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Ingersoll Milling Machine Co., Rockford, Ill.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 60 Cortlandt, N. Y.
Machinists Supply Co., Rochester, N. Y.
Manville, E. J. Mch. Co., Waterbury, Conn.
Newark Mch. Tool Works, Newark, N. J.
New Haven Mfg. Co., New Haven, Conn.
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty, N. Y.
Oretrick & Ayer, Philadelphia, Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son, J., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Fremas Tool & Supply Co., N. Y.
Scranton Supply & Mch'y Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfer's Sons L. F., Philadelphia, Pa.
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ltd., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.
Woodruff Mfg. Co., Hartford, Conn.
- Machinery for Hardware Manufacture.**
Add, Jno. & Son, New Haven, Conn.
- Machine Knives.**
Loring Coes & Co., Worcester, Mass.
- Machine Tools.—See Machinery.**
- Machine Work.**
Angus, C. H., Albany, N. Y.
- Machinists' Scales.**
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
Brown & Sharpe Mfg. Co., Providence, R. I.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.
- Mallets.**
N. Y. Mallet & Handle Works, N. Y.
- Manufacturing Sites.**
Illinois Central R. Co., Chicago, Ill.
- Measuring Tapes.**
Lufkin Rule Co., Saginaw, Mich.
- Ment Cutters.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Metals.**
Pearing, Wm. S., 100 Chambers, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.
- Metal Brokers.**
American Metal Co., N. Y.
- Metalburgists.**
Britton, J. Blodgett, Phila.
- Metal Saws.**
Ehrhardt, Gastave & Sons, Pittsburgh & C. O., Chicago, Ill.
- Milk Cans and Trimmings.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Milling Machines.**
Brown & Sharpe, Providence, R. I.
Cin. Milling Mch. Co., Cincinnati, Ohio.
Clough, R. M. Tolland, Conn.
Ingersoll Milling Machine Co., Rockford, Ill.
Fiedrick & Ayer, Phila. Pa.

Mining Knives.

Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.

Dachy, Edw. & Sons, Phila. Pa.

Leonard, B. E., Scranton, Pa.

Leonard, T. F., Scranton, Pa.

Mining Machinery.

Fraser & Chalmers, Chicago, Ill.

Mining Screens.

Harrington & King Perforating Co., Chicago, Ill.

Howard & Morse, 45 Fulton, N. Y.

Molding Sand.

Chicago Foundry Supply Co., Chicago, Ill.

Obermayer, S. Co., Cincinnati, O.

Paxson, J. W. & Co., Phila.

Whitehead Bros. Co., 517 W. 15th St., N. Y.

Motors, Water and Electric.

Thomson, Houston Motor Co., Boston, Mass.

Nail Machinery.

Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.

Borden & Lovell, 70 West, N. Y.

Cumberland Nail & Iron Co., Phila.

Oxford Iron Co., 81 Washington, N. Y.

Pottstown Iron Co., Pottstown, Pa.

Riverside Iron Works, Wheeling, W. Va.

Stebbins, C. J., 103 Reade, N. Y.

Nickel Platers' Supplies.

Zucker & Levett Chemical Company, 10 to 14 Grand St., N. Y.

Norway Shapes, Rollers of.

Howland, William & Harvey, Framford, Philadelphia

Nut Machines.

Dunham Nut Mch. Co., Unionville, Ct.

Nuts, Bolts, &c., Makers of.

American Bolt Co., Lowell, Mass.

American Screw Co., Providence, R. I.

Blake & Johnson, Waterbury, Conn.

Baskell, Wm. H. Co., Pawtucket, R. I.

Port Chester Bolt and Nut Co., Port Chester, N. Y.

Russell, Burdall & Ward, Port Chester, N. Y.

Sternbergh, J. H. & Son, Reading, Pa.

Wilson, J. Fred., Worcester, Mass.

Wm. H. Haskell Co., Pawtucket, R. I.

Oil Stones.

Pike Mfg. Co., Pike Station, N. H.

Ore Sampling Machines.

Fraser & Chalmers, Chicago, Ill.

Ores.

Winter, Francis, Philadelphia, Pa.

Ox Shoes.

Scranton Forging Co., Scranton, Pa.

Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Packing.

Billington, Jas. H. & Co., Phila. Pa.

Morris, Robt., St. Louis, Mo.

N. Y. Belting & Packing Co. Ltd., N. Y.

Padlocks.

Ames Sward Co., Chippewa, Mass.

Framin, E. T., Lancaster, Pa.

Hillebrand & Wolf, Phila. Pa.

Miller Lock Co., Philadelphia, Pa.

Paint.

Detroit Graphite Mfg. Co., Detroit, Mich.

Dixon, Jos. Crucible Co., Jersey City, N. J.

Paint Burners.

Dangler Stove & Mfg. Co., Cleveland, O.

Patent Solicitors.

Ashley, J. A., Washington, D. C.

Fitzgerald, S. C., Washington, D. C.

Rowson & Rowson, Phila. & Wash., D. C.

Jenner, H. W., Washington, D. C.

Paine & Ladd, Washington, D. C.

Stocking, E. B., Washington, D. C.

Perforated Metal.

Clinton Wire Cloth Co., Clinton, Mass.

Harrington & King Perforating Co., Chicago, Ill.

Phosphor Bronze.

Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.

Crescent Phosphorized Metal Co., Philadelphia, Pa.

Crosby Steam Gauge & Valve Co., Boston, Mass.

Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.

Plumb, Fayette K., Philadelphia, Pa.

Pig Iron.

Houston, C. B. & Co., Philadelphia, Pa.

Mann, Edwin R., Philadelphia, Pa.

Montour Iron & Steel Co., Danville, Pa.

Naylor & Co., 45 Wall, N. Y.

Pickands, Brown & Co., Chicago, Ill.

Pilling & Crane, Philadelphia, Pa.

Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.

Am. Pig Iron Storage Warehouse Co., 44 Wall, N. Y.

Pile Drivers.

Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.

National Pipe Bending Co., New Haven, Conn.

Pipe Cutting and Threading Machines.

Bignall & Keeler Mfg. Co., St. Louis, Mo.

Merrill Mfg. Co., Toledo, O.

Pancoast & Maule, Philadelphia, Pa.

Saunders & Sons, D., Yonkers, N. Y.

Pipe Grips.

Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittsack, &c., Makers of.

McNab & Harris Mfg. Co., N. Y.

Pipes, Water and Gas, Makers of.

Cumberland Nail & Iron Co., Phila. Pa.

Donaldson Iron Co., Emsa, Pa.

Riverside Iron Works, Wheeling, W. Va.

Plane Irons, Manufacturers of.

Pack Bros., Millbury, Mass.

Planes, Manufacturers of.

Stanley Rule & Level Co., N. Y.

Plate Iron and Steel, Mfrs of.

Etna Iron & Steel Co., Bridgeport, O.

Lukens Iron & Steel Co., Coatesville, Pa.

Moorehead-McCleane Co., Pittsburgh, Pa.

McIlwain & Sons, Reading, Pa.

Pottstown Iron Co., Pottstown, Pa.

Pottsville Iron & Steel Co., Pottsville, Pa.

Singer, Nimick & Co., Pittsburgh, Pa.

The Mahoning Valley Iron Co., Youngstown, O.

Wellman Iron & Steel Co., Thurlow, Pa.

Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.

Angus, C. H., Albany, N. Y.

Shepard Hdw. Co., Buffalo, N. Y.

Wilmoth & Hobbs Mfg. Co., Bridgeport, Conn.

Plumbago.

Chicago Fdy. Supply Co., Chicago, Ill.

Plows.

Ross, A. M. & Co., Illon, N. Y.

Pelishing Machines.

Watson & Stillman, 204 E. 43d, N. Y.

Pelishing Wheel.

La Massena, C. E. & Co., Newark, N. J.

Post Hole Diggers.

Gibbs Mfg. Co., Canton, Ohio.

Graham, John H. & Co., 113 Chambers St., New York.

Kohler, F. E. & Co., Canton, O.

Wister, I. & K. & Co., Philadelphia, Pa.

Poultry Nettings.

Barnum, E. T., Detroit, Mich.

Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.

N. J. Wire Cloth Co., Trenton, N. J.

Power Hack Saws.

Stover Novelty Wks., Freeport, Ill.

Power Hammers.

Bradley & Co., Syracuse, N. Y.

Belden Mach. Co., New Haven, Conn.

Dienelt & Eisenhardt, Philadelphia, Pa.

Dupont Mfg. Co., St. Johnsbury, Vt.

Hackney Hammer Co., Cleveland, O.

Jenkins & Lingie, Bellefonte, Pa.

Long & Alstatter Co., Hamilton, Ohio

Power Punches and Shears.

Eaton, Geo. H. & Co., Boston, Mass.

Long & Alstatter Co., Hamilton, Ohio

Presses, Dies, &c.

E. W. Bliss Co., Brooklyn, N. Y.

Crosby, G. A. & Co., Chicago, Ill.

Niagara Stamping and Tool Co., Buffalo, N. Y.

Stark Mch. & Tool Co., Buffalo, N. Y.

Stiles & Parker Press Co., Brooklyn, N. Y.

Waterbury Mch. Co., Waterbury, Conn.

Bliss, E. W. Co., Brooklyn, N. Y.

Eaton, Geo. H. & Co., Boston, Mass.

Mayville, E. J. Mch. Co., Waterbury, Ct.

Merriman, A. H., Meriden, Conn.

Niagara Stamping and Tool Co., Buffalo, N. Y.

Stark Mch. & Tool Co., Buffalo, N. Y.

Waterbury farrel foundry and machine Co., Waterbury, Conn.

Pulverizing Mill.

Lee, J. H. & D. Co., Hornellsville, N. Y.

Bradley Fertilizer Co., Boston, Mass.

Pump Machinery.

Dean Bros. Steam Pump Works, Indianapolis, Ind.

Hooker-Cole Steam Pump Co., Chicago, Ill.

McGowan, J. H. & Co., Cincinnati, O.

Maslin, J. & Son, Jersey City, N. J.

Norwalk Iron Wks. Co., So. Norwalk, Conn.

Southwark Fdy. & Mch. Co., Phila. Pa.

Steam Pump Works, Kashtanville, Mass.

Worthington, Henry K., 88 & 88 Liberty St., N. Y.

Pumps, makers of.

Bellevue Pump Co., Bellevue, Iowa.

Deming Co., Salem, V.

Douglas, W. & B., Middletown, Conn.

Maest, Foss & Co., Springfield, O.

Myers, F. & Bro., Ashland, O.

St. Joseph Pump Co., St. Joseph, Mo.

Punches and Shears, Hand and Power.

New Doty Mfg. Co., Janesville, Wis.

Niagara Stamping and Tool Co., Buffalo, N. Y.

Stark Mch. & Tool Co., Buffalo, N. Y.

Stiles & Parker Press Co., Brooklyn, N. Y.

Cockburn Barrow & Mch. Co., Jersey City, N. J.

Crosby, G. A. & Co., Chicago, Ill.

Stiles & Parker Press Co., Brooklyn, N. Y.

Wals & Roos, Punch & Shear Co., Cincinnati, Ohio.

Waterbury farrel foundry and Mch. Co., Waterbury, Conn.

Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.

Birch, I. K., Chicago, Ill.

Perry, W. H. & Co., Providence, R. I.

Richards, J. B. & Co., Pittsburgh, Pa.

Railway Supplies.

Scully Steel & Iron Co., Chicago, Ill.

Burditt & Williams, Boston, Mass.

Beyer, W. S., 65 Fulton, N. Y.

Ripley Mfg. Co., Unionville, Conn.

Razors.

Butcher, W. & S., 135 Duane St., N. Y.

Curley, J. & Bro., 8 Warren St., N. Y.

Electric Cutlery Co., 118 Chambers, N. Y.

Schmitz, E. Lothar, 92 Reade St., N. Y.

Southington Cutlery Co., Southington, Conn.

J. R. Torrey Razor Co., Worcester, Mass.

Refrigerators.

Chalencen C. m. Planter Co., Grand Rapids, Mich.

Grano Rapids Refrigerator Co., Grand Rapids, Mich.

Kankakee Mfg. Co., Kankakee, Ill.

Refrigerator Door Fasteners.

Conroy, P. J. & Co., Philadelphia

Rivets.

Blake & Johnson, Waterbury, Conn.

Burden Iron Co., Tr. y. N. Y.

Cobb & Drew, Plymouth, Mass.

Henderson, Jas. S., 165 Greenwich, N. Y.

Plymouth Mills, Plymouth, Mass.

Sternbergh, J. H. & Son, Reading, Pa.

Townsend, W. F. & Co., New Brighton, Pa.

Riveting Machines.

Add. Jno. & Sons, New Haven, Conn.

Rock Drills.

Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.

Rand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery.

Birmingham Iron Fdry, Birmingham, Conn.

Booth, The Lloyd, Co., Youngstown, O.

Leachburg Foundry & Mch. Co., Pitts-

burgh, Pa.

Mahoning Fdry & Mch. Co., Danville, Pa.

Morgan Construction Co., Worcester, Mass.

Robinson-Rea Mfg. Co., Pittsburgh.

Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.

Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.

Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.

Booth, The Lloyd, Co., Youngstown, O.

Chicago Foundry Co., Chicago, Ill.

Garrison, A. Fdry. Co., Pittsburgh, Pa.

Johnson Foundry Co., Johnstown, Pa.

Seaman, Sleeth & Black, Pittsburgh.

Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.

Roofing.

Berlin Iron Bridge Co., E. Berlin, Conn.

Boston Bridge Works, Boston, Mass.

Cambridge Roofing Co., Cambridge, O.

Johns, H. W. Mfg. Co., 87 Malden Lane, N. Y.

Rope.

Travers Bros. Co., 107 Duane St., N. Y.

Rope and Web Goods.

Covert Mfg. Co., West Troy, N. Y.

Covert's Saddlery Wks., Farmer, N. Y.

Rubber Goods.

Canfield, H. O., Bridgeport, Conn.

Rules, Manufacturers of.

Larkin Rule Co., Saginaw, Mich.

Standard Tool Co., Lowell, Mass.

Stanley Rule & Level Co., 29 Chambers, N. Y.

Sad Iron Holders.

Ksner, J. L. & Co., Chicago, Ill.

Sad Irons.

Cleveland Fdry Co., Cleveland, O.

Universal Sad Iron Co., Milwaukee, Wis.

Sand Paper.

Baeder, Adamson & Co., Phila. Pa.

Sash Balances.

Caldwell Mfg. Co., Rochester, N. Y.

Buginin, R. E., W. F. Mfg. Co., Hartford, Conn.

Pullman Sash Balance Co., Rochester, N. Y.

Stewart & Baker, Rochester, N. Y.

Sash.

Growth Reversible Sash & Sash Centre Co., Detroit, Mich.

Sash Cordes and Chains.

Norton, Thos., 65 Elizabeth, N. Y.

Ossawan Mills Co., Norwich, Conn.

Samson Cordage Works, Boston, Mass.

Sash Centres.

- La Belle Steel Co.,** Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburgh, Pa.
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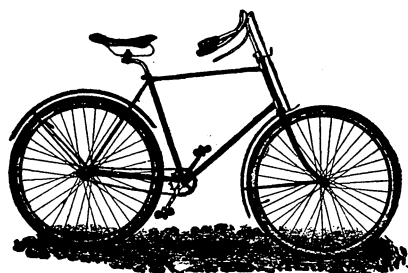
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Bemis & Call, Edw. & To.	102	Cleveland Foundry Co.....	93	Hobson, F. & Co.....	63	Monroe, B. & Co.....	87	Richardson, C. F. & Son.	76	Union Metallic Cartridge	1
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Bethlehem Iron Co.....	38	Cleveland Foundry Co.....	93	Hobson, F. & Co.....	63	National Pipe Bending Co.	35	Richards, D. W. & Co.	63	Waterbury Machine Co.	49
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Bethlehem Iron Co.....	38	Cleveland Foundry Co.....	93	Hobson, F. & Co.....	63	National Steel Castg	70	Richards, D. W. & Co.	63	Weilman Iron & Steel Co.	55
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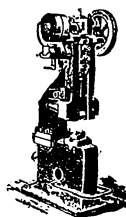
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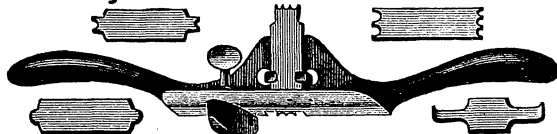
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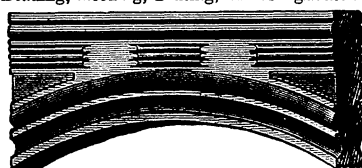
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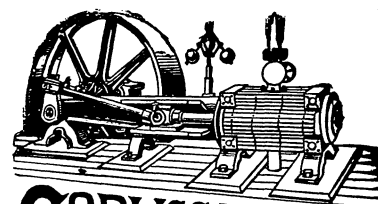
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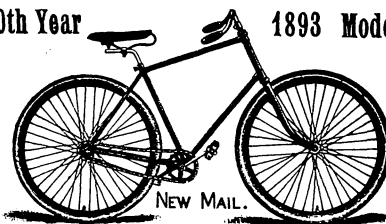
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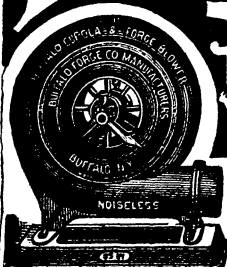
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See Page 72.

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Carriage Bolts made from Best Square Iron a
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Feet.	Inch.	Length of Flanges.	Double Acting.
6x2	¾ to 1 ¼	3 ½ in	63
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THE IRON AGE

THURSDAY, MARCH 23, 1893.

Industrial Progress of Japan.

The first official report upon the industries of the country has just been published by the Japanese Government, and contains some interesting information in regard to the industrial progress of that progressive nation since she began to put on Western civilization. The most important of the new industries is cotton spinning, in which 38 mills, with a capital of over \$10,000,000, are engaged. Owing to various causes, however, the companies

requirements of the home market, but considerable export trade is being done. In the case of matches, for instance, we learn that an export business of the value of \$1,115,000 was done in 1891, a small quantity of these articles being even shipped to the United States. That progress is going on is evident, for we are told that electricity is fast gaining ground in Japan, and the making of apparatus for domestic use is being carried on to some extent. A regrettable feature which is noticeable, however, is a decline in some of those artistic industries which have

Worthington Pumping Engines at the World's Fair.

The method of supplying the large quantities of water necessary for the fountains, sprinkling, steam engine condensers, boilers and fire protection will form one of the most important and interesting features of the Columbian Exposition. It was originally intended to take this supply from the city mains, but as the project developed it was found that the amount

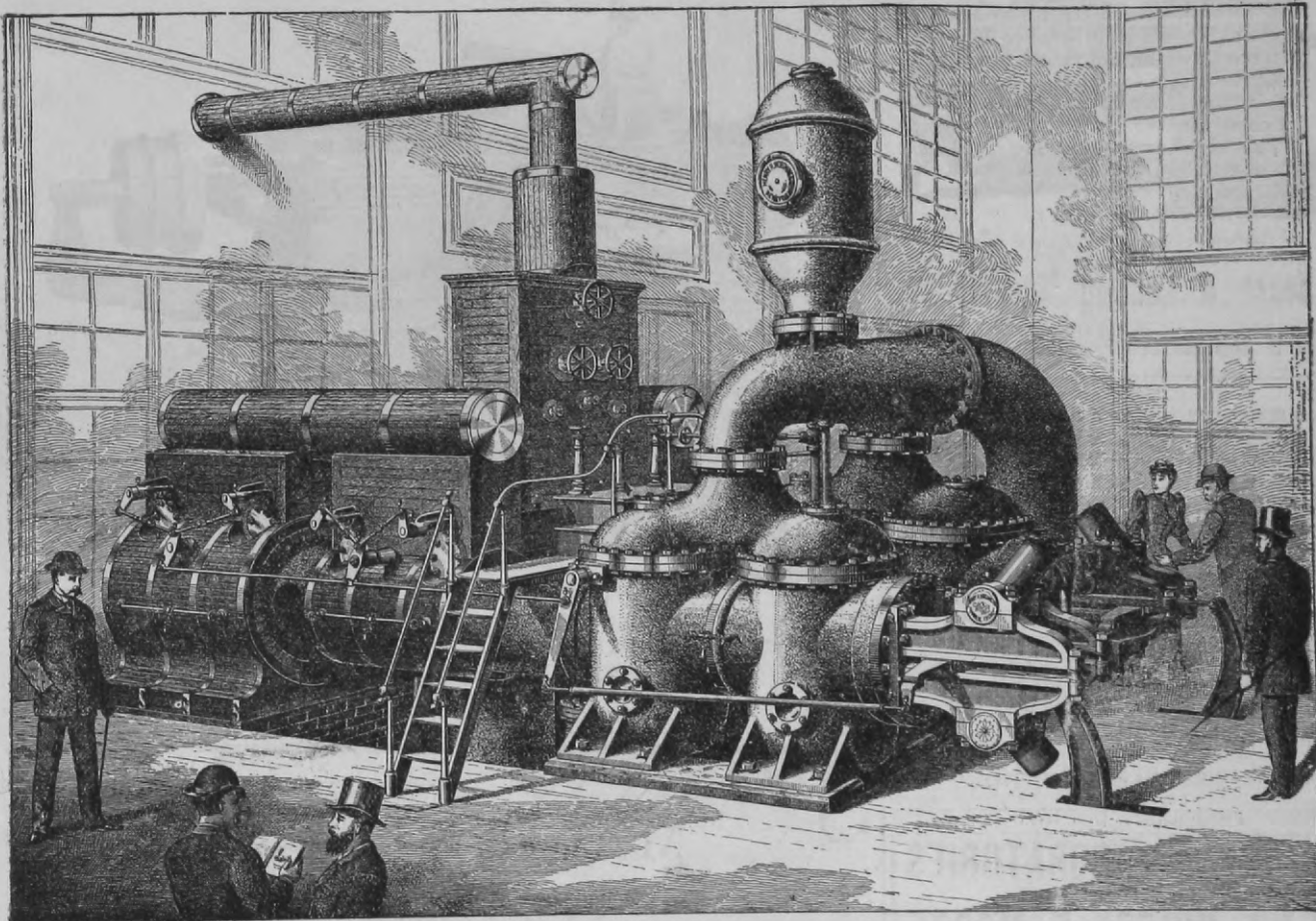


Fig. 1.—Horizontal Worthington Pumping Engine.

WORTHINGTON PUMPING ENGINES AT THE WORLD'S FAIR.

operating these mills are said to be in no very flourishing condition just at present, as we learn that in 1891 only three of the 38 concerns could show a profit. Among other new industries undertaken by the Japanese is the manufacture of paper, which is stated to be very flourishing; so much so that the natives are now asking for a prohibitive duty on this article. Silk mills, are of course, in operation, but this is not a new industry. Others, however, which have recently been called into life are the manufacture of matches, soaps, rope, Portland cement, glass, bricks and brushes; also tanning and the manufacture of sulphuric acid, soda and chlorine. On the whole, the efforts made by the Japanese to develop their resources have been very successful. In more than one of the industries above mentioned the manufacture now not only suffices for the

been so prominent and so graceful a part of Japanese life and character in the past.

In his recent testimony, given before the British Royal Commission on the labor question, Robert Giffen, the eminent statistician and economist, made two striking statements bearing on strikes and trades unions. First, he estimated that during the years 1890 and 1891 the wage-earners of England lost \$12,960,000 by strikes, in addition to a large sum indirectly lost by the diversion of trade into new channels. In the second place, he mentioned that there are 13,000,000 workers in Great Britain, of whom 7,000,000 are adult male laborers. Meanwhile, the most complete reports of the trades unions show a membership of only 871,000; demonstrating that not one in twenty is a unionist.

needed would be greater than could be obtained in this way, and the pressure would be too low in case of fire. This made an independent pumping station necessary, and a contract for four pumping engines aggregating 40,000,000 gallons capacity in 24 hours against a head of 230 feet was let to the Henry R. Worthington Company of New York, who had performed a similar service at Philadelphia in 1876, New Orleans in 1884, London in 1888, and Paris in 1889.

The pump house will stand facing the Grand Plaza at the southeast corner of the Palace of Mechanic Arts. It will be a handsome two-story building of brick, and probably remain a permanent ornament to the park after the close of the exposition. The architecture of the exterior will be decidedly classic and ornamented with ten medallion portraits of engineers whose

names are historical as successful constructors of water works in this country and England. The upper story will be fitted up as reception rooms, where visitors interested in water-works matters will be welcome.

The circulating water for condensers will be pumped from the main Machinery building, where a space 100 x 50 feet will also be occupied by the Worthington Company, who will combine this with a portion of their regular exhibit and furnish an assortment of about 40 pumps, seven of which will be in operation, with an aggregate capacity of 24,000,000 gallons per day in addition to the main supply.

The main pumping station will contain two horizontal and two vertical engines, besides two No. 2 Underwriter fire pumps.

The largest engine, Fig. 2, will be vertical, of 15,000,000 gallons capacity, and will be a duplicate of one furnished for the city of Toledo, Ohio, except that it is not furnished with the high-duty attachment, as is the Toledo engine. This engine will have two high-pressure and two low-pressure steam cylinders, two double-acting water plungers and an independent jet condenser.

The high-pressure cylinders will be on top and in line with the low-pressure cylinders, which latter will be supported by cast-iron frames from the pump cylinders, all resting on a heavy bed plate. The piston rods will extend down through stuffing boxes on top of the water cylinders, and be coupled directly to the plunger. The weight of the moving parts will be carried by two single-acting balancing plungers, attached one to each piston rod, working in separate cylinders, which communicate with a large air tank and operate in the manner well understood by those acquainted with the Worthington vertical engines.

The diameter of the high-pressure steam cylinders will be 30 inches, low-pressure 60 inches and water plungers 32 inches, all of 60-inch stroke. The suction and delivery pipes will be 30 inches, steam pipe 6 inches and rated pump horse-power 700. The independent air pump will have 14-inch steam cylinders, 17-inch water cylinders, and 15 inches stroke. Engines of this type have been in use for a number of years in the water works of Memphis and Nashville, Tenn., Brooklyn, N. Y., Peoria, Ill., and other cities.

The other vertical engine, Fig. 3, will be triple expansion with two high-pressure cylinders of 15 inches diameter, one intermediate cylinder, 33 inches diameter; one low-pressure cylinder, 57½ inches diameter, and four single-acting water plungers 22 inches diameter, all of 38 inches stroke. Each steam cylinder will be directly over and in line with a pump cylinder and the piston and plunger will be attached directly to the same rod.

A horizontal rocking beam will connect one high-pressure cylinder rod with the intermediate cylinder rod, so that their respective pistons will work in unison, while another similar beam will connect the other high-pressure cylinder with the low-pressure cylinder. The duplex valve motion is so arranged that each of these couples operates the valves of the other side. The steam cylinders will all be jacketed and the receivers will contain reheating tubes filled with live steam.

This engine will have a capacity of 8,000,000 United States gallons per 24 hours, or 330 pump horse-power, at a piston speed of about 135 feet per minute. Diameter of steam pipe, 4 inches; suction pipe, 24 inches; delivery pipe, 20 inches. The exhaust steam will be received by a jet condenser and independent Worthington air pump with 12 x 10 inch steam cylinders, and 14 x 10 inch water cylinders.

One of the horizontals, Fig. 1, will be similar in construction to the standard Worthington high-duty water-works en-

gine now in use by so many large cities, and will be compound condensing, with two high-pressure cylinders 25 inches diameter, two low-pressure cylinders 50 inches diameter, and two double-acting water plungers 27½ inches diameter, all of 38 inches stroke. It will be fitted with the high-duty attachment, patented and introduced by this company, which permits of the use of steam at a high grade of expansion. This ingenious device has been described in former issues of *The Iron*

which there will be a series of spray plates. This engine is rated at 500 horse-power, and will be capable of delivering over 12,000,000 United States gallons of water in 24 hours. The diameter of both suction and discharge pipes will be 30 inches, and of the steam pipes 5 inches.

The water end will be of a special design for heavy pressures, and in this and other respects the engine will be an almost exact duplicate of one recently furnished by this company for the city of Lowell,

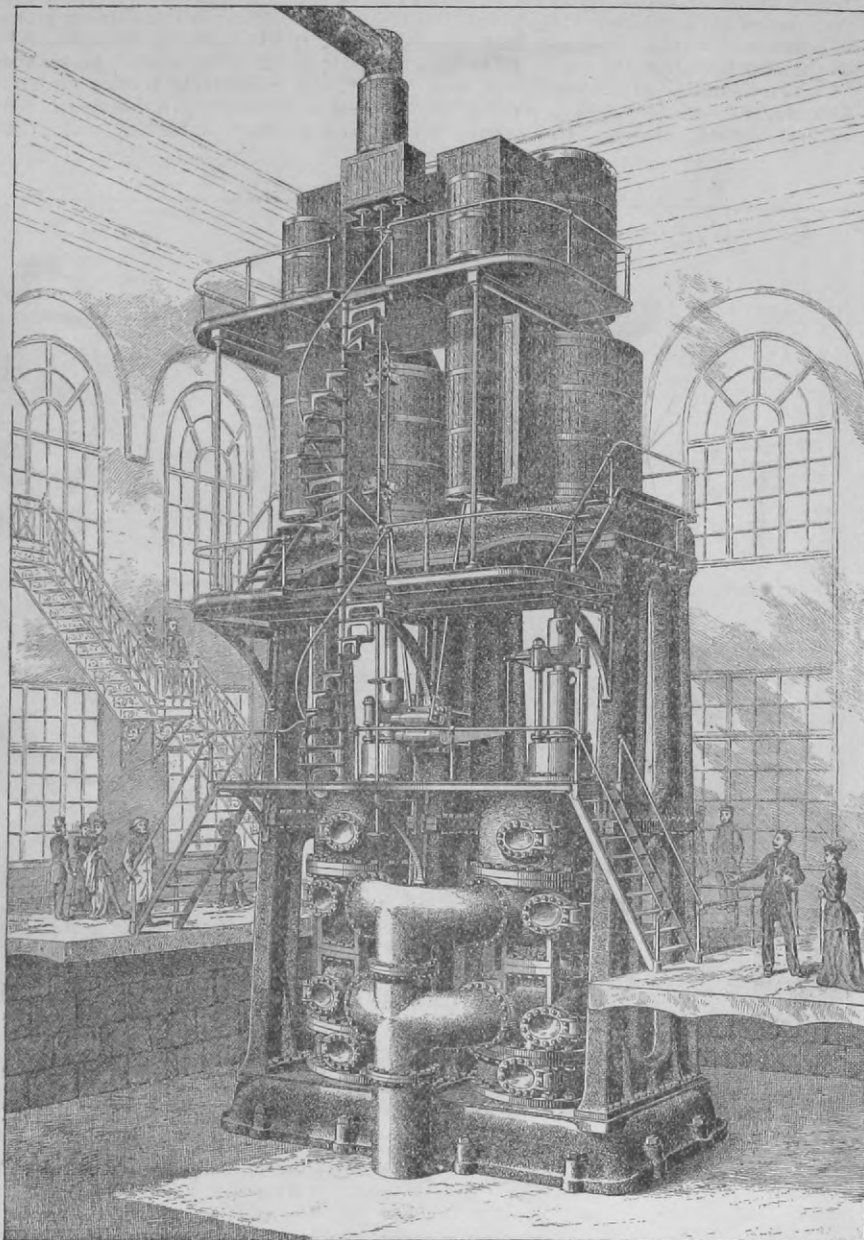


Fig. 2.—The Worthington Vertical Pumping Engine.

WORTHINGTON PUMPING ENGINES AT THE WORLD'S FAIR.

Age. The compensating cylinders will be carried by frames bolted to the outside ends of the water cylinders, and the compensating plungers will work against cross heads attached to the ends of rods which extend from the plungers out through the water cylinder heads.

The air pumps, which are 12 inches diameter by 38 inches stroke, will be horizontal and lie directly under the high-pressure steam cylinders. They will be driven from the lower ends of vertical beams, attached at their upper ends by links to the compensating cylinder cross heads. The air pump valve chamber, placed between the two air pump barrels, acts as a support for the jet condenser, in

Mass., which developed a duty exceeding 115,000,000 foot pounds per million heat units.

The other horizontal engine will be a somewhat radical departure, in that it is designed to run at a piston speed of 350 feet per minute, on each side. It will be a six cylinder triple-expansion with high, intermediate and low pressure cylinders on each side, arranged tandem, and working in line with the water plunger. Diameter of high-pressure cylinders, 9½ inches; diameter of intermediate cylinders, 15 inches; diameter of low-pressure cylinders, 25 inches; diameter of water plungers, 11 inches; all of 48 inches stroke. The steam valves will be cylindrical and the high-

pressure cylinders will be fitted with cut-offs. The intermediate and low pressure cylinders are steam jacketed. The steam will be condensed by a Worthington independent condenser, having two 9-inch steam cylinders and two 12 inch pump cylinders, all of 10 inches stroke. The diameter of the steam supply pipe to this engine is 4 inches, the diameter of the suction pipe 24 inches, and the diameter of the delivery pipe 20 inches. Horse-power, 190, and capacity, 5,000,000 United States gallons per 24 hours.

pumps, the supply and delivery pipes and the general distribution of the system as far as the station is concerned.

British War-Ship Construction.

In 1889 the British Parliament passed an act which had for its object, as announced at the time, such an increase in the fleet of Great Britain as should make it equal in fighting power to the combined naval forces of any two foreign nations.

contract comprised 4 first-class battle ships, 5 first-class cruisers, 17 second-class cruisers and 6 torpedo vessels. Those which were to be laid down in the Government dockyards included 6 battle ships, 4 of the first class and 2 of the second class, with a number of cruisers of the first, second and third classes and several torpedo vessels.

As originally planned, each one of the eight first class battle ships was to carry four 13½-inch 67-ton breech-loading rifled guns mounted in turrets or in barbettes, as the main armament, with hydraulic apparatus for training, elevating and loading, besides ten 6-inch guns and a secondary battery of rapid-fire and machine guns, with a complete torpedo equipment. It was afterward decided that the 6-inch guns should be of the rapid-fire type. The maximum thickness of armor assigned was 18 inches. Twin-screws driven by triple-expansion engines were adopted. A speed of 16 knots with natural draft and of 17½ knots with forced draft and a maximum of 13,000 indicated horse-power was expected. The displacement was to be a little more than 14,000 tons; length, 380 feet; beam, 75 feet; extreme draft of water, 27.5 feet. Nominally the coal endurance was to be sufficient to enable a distance of 7000 to 8000 nautical miles to be covered at a speed of 10 knots, but the usual experience is that estimates of this nature are not realized in actual service, and in fact the present estimate for these vessels is 5000 nautical miles.

The construction of these eight first-class battle ships, which surpass in size and power any previously built for the British navy, has proceeded in substantial accordance with the original design. As they will for many years be included among the finest war ships afloat, it may be of interest to recall their names. They are the "Royal Sovereign," "Hood," "Ramillies," "Empress of India," "Repulse," "Resolution," "Revenge" and "Royal Oak." The cost of the hull and machinery of each one of these ships exceeds \$4,000,000.

In the case of the two second-class battle ships, the "Centurion" and "Barfleur," originally designed to be of the same type as the larger ones already described, but to have a displacement of only about 9000 tons each, material modifications have been made in the plans so that the displacement is to be 10,500 tons and they will in fact be more powerful than some of the older battle ships that are rated as of the first class. They will each carry four 10 inch 29-ton breech-loading rifles mounted in pairs in armored barbettes, and ten 4.7-inch rapid fire guns, besides guns of smaller caliber and torpedoes. If necessary the guns can be worked entirely by hand. The main armor belt will have a maximum thickness of 12 inches. It is estimated that the speed will be 17 knots with natural draft and 18 to 18½ knots with forced draft. Like the new first-class battle ships, these vessels will have a high free-board throughout their length. In connection with the "Centurion" it is of interest to note, as illustrating the speed with which work can be done in the English yards, that 200 tons of material were built into her within the first week after she was laid down.

In point of numbers the cruisers occupied a large part of the building programme of 1889. They were to be of comparatively few types, but the original intention has not been followed very strictly in this respect. Considerable variations from the original designs have been authorized from time to time, especially as regards vessels built in the Government yards. The modifications have been mainly in the direction of greater displacement, increased protection to machinery and to

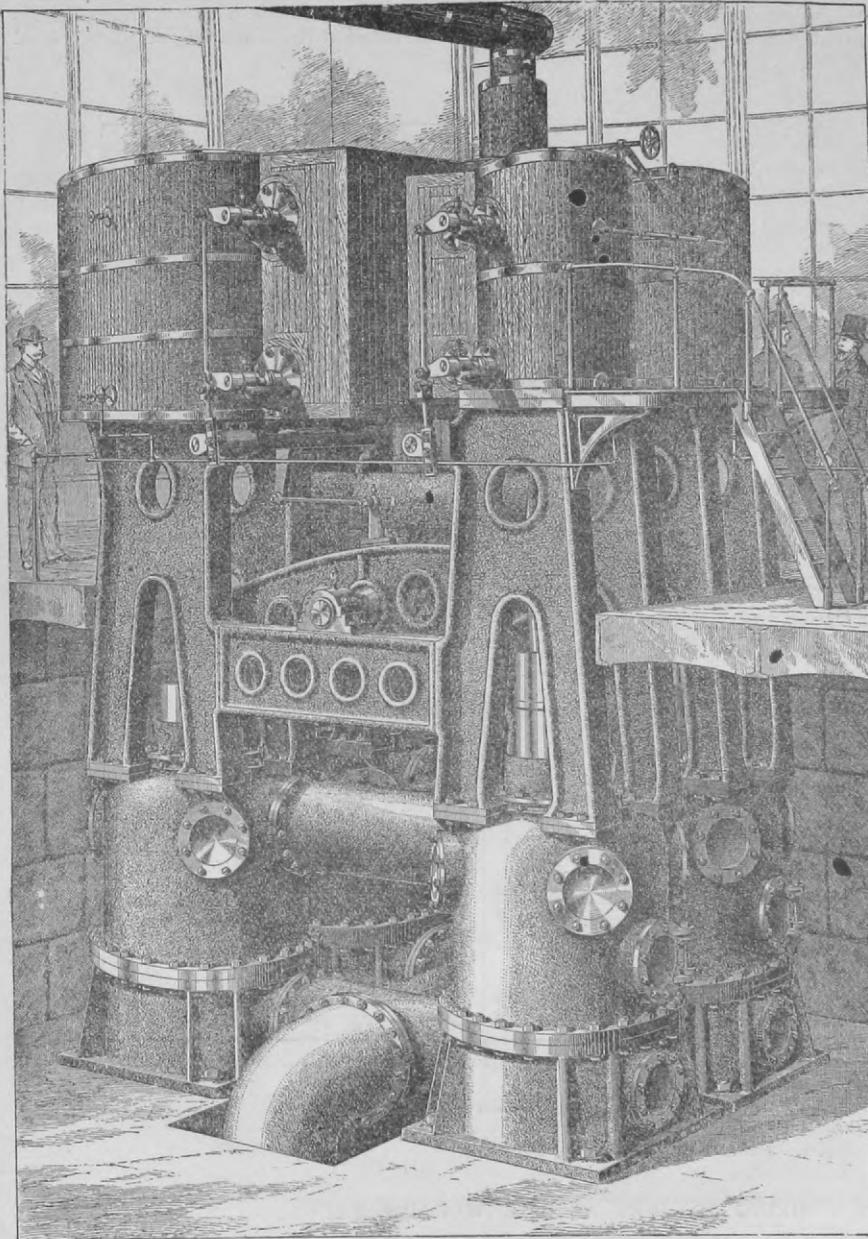


Fig. 3 — Worthington Triple-Expansion Beam Pumping Engine.

WORTHINGTON PUMPING ENGINES AT THE WORLD'S FAIR.

The potable water supply will be taken from the Sixty-eighth street station of the Chicago water works, in which is located a Worthington high-duty engine recently erected, having a capacity of 15,000,000 gallons in 24 hours, and is similar in construction to the 12,000,000 gallon engine in the exposition grounds. Its high pressure steam cylinders are 33 inches diameter; low-pressure, 66 inches diameter; water plungers, 33 inches diameter, all of 50-inch stroke.

The general arrangement of this plant will be understood from the plan and side elevation, Figs. 4 and 5. These drawings show, in addition to the location of the

This measure, known as the Naval Defense act of 1889, embodied a ship-building programme which provided for a total of 70 new ships of an estimated aggregate displacement of 316,000 tons and carrying 540 tons in their main batteries, besides a suitable number of rapid-fire and machine guns of smaller caliber. The work thus inaugurated was to extend over a period of five years, and it was decided that 38 of the vessels should be built in the Government dockyards and 32 by contract. The total expenditure which the project involved was estimated at about \$105,000,000.

The vessels which were to be built by

gun's crews, and a marked recognition of the value of rapid-fire armament.

The annual statement of the First Lord of the Admiralty, recently submitted in explanation of the Navy estimates for 1893-94, presents an interesting view of the progress of work under the Naval Defense act of 1889. The close of the financial year, which in England ends on March 31, marks the passage of four years out of the five through which work under the act named was to be distributed. One-half of the total number of ships provided for by that act are practically completed and are either in commission or nearly ready for service. These 35 completed ships comprise 2 first class battle ships, the "Royal Sovereign" and "Hood;" 3

given the following results: With natural draft, boiler pressure, 150.3 pounds; air pressure, 0.39 inch; vacuum, 28.3 inches; revolutions, 96.8; indicated horse power, 9644; speed, about 16½ knots; with forced draft, boiler pressure, 155 pounds; air pressure, 1.6 inches; vacuum, 27.8 inches; revolutions, 106.8; indicated horse-power, 13,312; speed, 18 knots. After the conclusion of the trials leakage of boiler tubes became serious and ferrules were fitted to them, this device having proved successful in other cases where grave trouble had been experienced from the same cause.

In the contract work under the Naval Defense act unavoidable delays have occurred, but 25 of the 32 contract-built

Other new work is already under way, including a battle ship which is to be an improved "Centurion," and a number of first-class torpedo boats. Orders have been given for six torpedo boat destroyers of new type, which promise to be a notable addition to the smaller vessels of the fleet, as a speed of 27 knots is guaranteed. It is proposed to complete and try the first ones of the new type this summer and afterward to order 14 other vessels of this class from private firms. In this connection it may be noted that in France, also, work is about to begin on a torpedo boat designed for a speed of 27 knots.

An official estimate made in 1889 stated that the effective navy of Great Britain consisted at the beginning of that year of

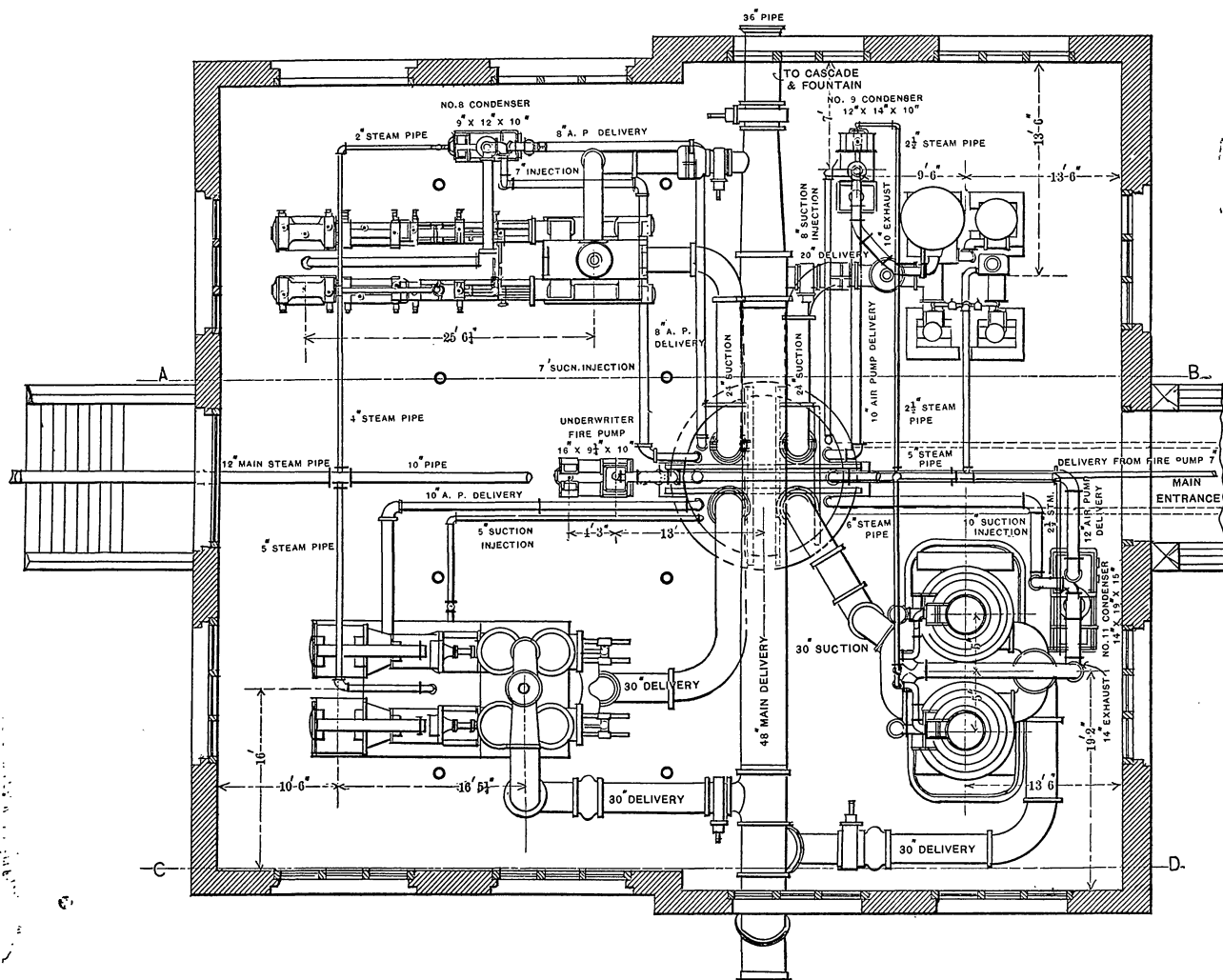


Fig. 4.—Plan View of Pumping Station.

WORTHINGTON PUMPING ENGINES AT THE WORLD'S FAIR.

first-class cruisers, 21 second-class cruisers, 4 dockyard built and 17 contract built; 4 third class cruisers, and 5 torpedo vessels.

The remarkably rapid progress achieved in the construction of the "Royal Sovereign" is worthy of note. The keel was laid at Portsmouth dockyard in September, 1889, and she was completed in two years and eight months from that time—an unprecedented record for a ship of anything like her size and type. Special effort had been made to push the work on this particular ship. The actual cost of labor and materials for dockyard work was well within the original estimate. This vessel was commissioned in May, 1892, as flagship of the Channel squadron.

Although the information is not included in the First Lord's statement, it may be added that the steam trials of the "Royal Sovereign" were reported at the time to have been favorable and to have

vessels are practically completed, including 1 first-class battle ship, the "Ramilies," 3 first-class cruisers, 17 second-class cruisers, already noted as completed, and 4 torpedo vessels.

Of the total of 70 vessels provided for by the act named there are 35 which are not yet completed. It is expected that 26 of them will be finished within a year and that the remaining nine will be brought near to completion within the same period.

Several new vessels not included in the Naval Defense act are now to be taken in hand, and a number of torpedo boat destroyers to be built by contract are to be ordered. Two additional battle ships of the "Royal Sovereign" type, with some improvements, are proposed. Their principal armament of heavy guns will consist in each case of four 12-inch guns of latest pattern.

62 armored ships, 29 protected and partially protected and 282 unprotected vessels, including 131 torpedo boats. Taking account of ships building at that time, and also of those provided for by the comprehensive scheme embodied in the Naval Defense act, it was then estimated that in 1894 the fleet would number 76 armored ships, 88 protected and 336 unprotected vessels, including 147 torpedo boats. This does not, of course, include new construction authorized lately and recently begun or about to be taken in hand.

A new industry is reported by an English exchange, springing into life at Barrow, in the North of England. For some time experiments have been conducted at Wakefield in the production of steel barrels for the conveyance of petroleum, and as they have been proved to be a success, the works of Caird & Purdie, shipbuilders,

are being fitted up with machinery to produce these barrels. In the first place, the barrels, which are of light steel, are made in halves by means of compression in a mold when the plate is hot. Afterward they are welded together by means of electricity. The operation is in every sense a novel one and will be watched with interest. The barrels are intended for use by the large oil-carrying companies engaged in the oil trade of the East, where the temperature has a great effect on wood casks and results in much leakage.

An English scientific journal states that M. Van Rysselberghe considers that the electric current cannot be transmitted to a

WORLD'S FAIR NOTES.

English Schemes for Traveling Expenses.

English mechanics have evolved a novel scheme for visiting the fair. In many of the big factories of the Midland districts of England the employees are organizing lotteries for holiday trips to Chicago. The experiment was tried with success during the Paris Exhibition, but the distance being shorter clubs did not procure such wholesale reductions in rates as they will this summer.

Twenty or thirty operatives pay 1 shilling per week to a treasurer, who is

home. The holder of such a certificate may dispose of it as he desires, as it is transferable. A great many have gone into such schemes as an investment and will sell their certificates if they draw prizes at an advance. Lottery schemes of all kinds take well in England, and it is reported that the World's Fair lottery projects are patronized to a great extent.

Of course this method does not mean travel *via* fast steamers and express trains. But a general good time is promised, and comfort and convenience so far as is possible has been guaranteed. More attention is paid to cheap excursions for workingmen in England than in any other country. There are many firms there who give very low rates to such parties and

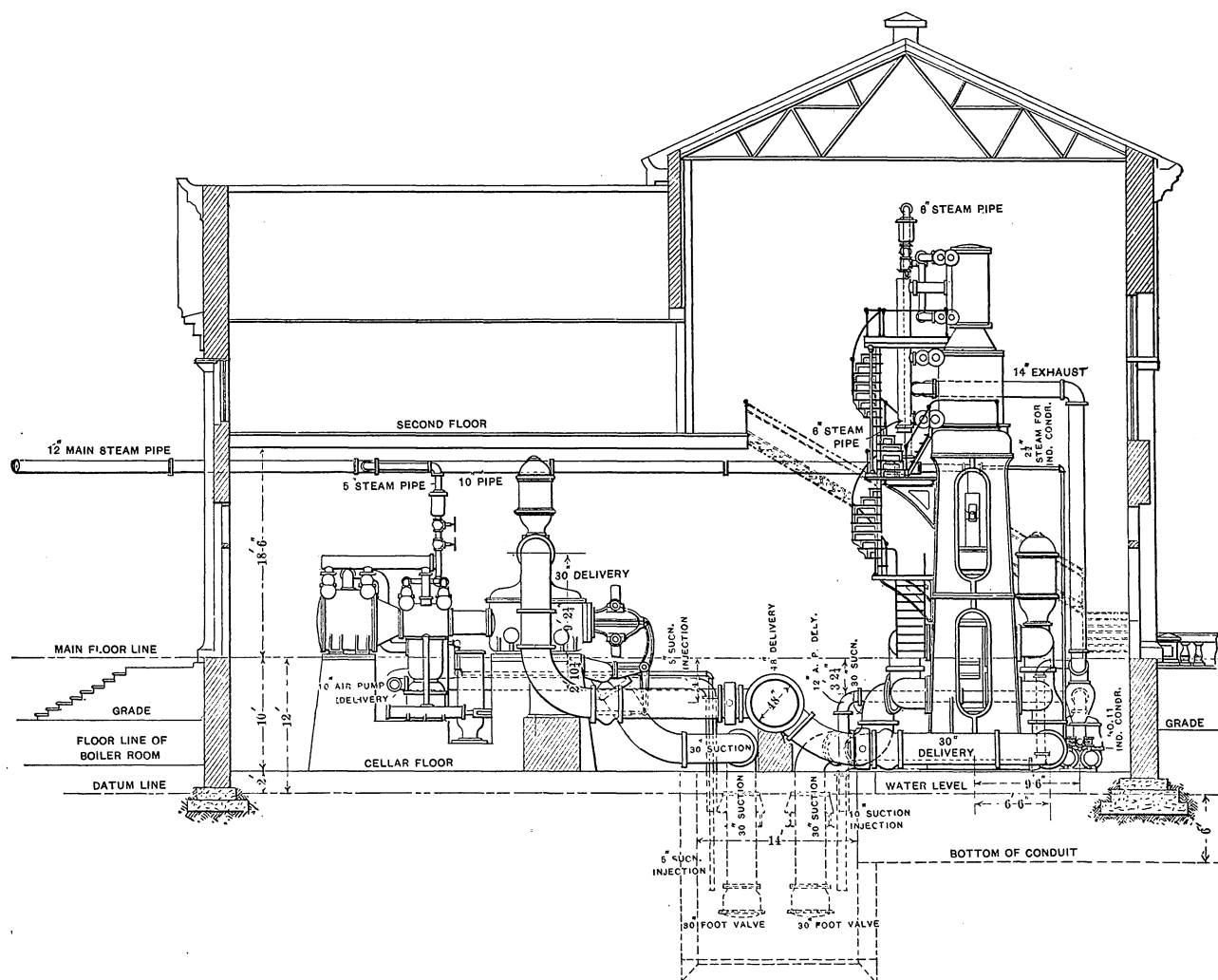


Fig. 5.—Side Elevation of Pumping Station.

WORTHINGTON PUMPING ENGINES AT THE WORLD'S FAIR.

distance practically or economically. In his scheme for electrically lighting the port and city of Antwerp he has made a thoroughly new departure. His method is to pump water to a considerable height, whence it flows by gravity to several electric lighting stations, where it drives turbines coupled directly to dynamos, which supply electric current to lamps within a short radius. The slight distance through which the current is conducted permits of using iron instead of copper for this purpose, effecting a further economy, notwithstanding the increased sectional area necessary. The Hydro Electric Company of Antwerp will, it is said, be able to supply an electric current at less than the usual rate, and will be able also to supply water, enabling consumers to generate their own electric current. The result will be watched with interest.

chosen by ballot. These payments have been kept up during the winter and now amount to a considerable sum, to which has been added the forfeited subscriptions of those members who have been delinquent. About April 1, when a given sum has been attained, the club will open negotiations with some tourists' agency. The agent is told how much money is on hand, and is asked for estimates as to the number of persons who can be transported and cared for during the fair for the given amount. He may decide that the money in hand will suffice for six persons from Birmingham to the World's Fair, including, of course, hotel accommodations while in Chicago. Then the six men who are to make the journey are selected by drawings. Those who hold the lucky numbers are given certificates good for the trip, while those unlucky in drawing blanks must stay at

make money. These firms keep many agents abroad arranging special rates at hotels and boarding houses for excursionists. Their representatives have been in Chicago during the past month securing quarters in the second-class hotels for their patrons, and the indications are that during the summer many such visitors will enjoy the sights at Jackson Park.

Hotel Accommodations.

A recent count by a local journal disclosed the fact that up to that time work had begun on no less than 279 structures, containing about 34,000 rooms, in the World's Fair district, comprising the territory south of Fortieth street, north of Seventy-fifth street, and east from the boundaries of the south parks and the Washington Park Club. In securing the totals no attention has been paid to any

hotel projects which thus far exist solely on paper. Some of the latter will doubtless be built, but they are too uncertain to be considered in cold figures and tables. Nor have any hotels been included which will cater directly to World's Fair trade, but which were constructed prior to six months ago. It is immaterial for what purpose the buildings will be used after the fair. Some will be torn down and others given over to residences and flats. Just at present they are all hotels, and must be counted in when Chicago's capacity to entertain next summer's visitors is being computed. Private residences, where one or more rooms will be rented, and hotels built before the World's Fair period will increase the number of available rooms in the exposition district to nearly if not quite 50,000. Hotel men state that visitors will average two to a room. If this be correct, 100,000 people can walk to the exposition from the quarters provided for them and walk back in the evening. The total capacity of the hotels in the business district of Chicago has been more than duplicated in about six months in the immediate vicinity of the fair. It is claimed by the Chicago people that no World's Fair ever before made such ample preparation for the accommodation of visitors.

Sweden at the Fair.

Arthur Leffler, the chief commissioner of Sweden to the World's Columbian Exhibition at Chicago, and Axel Welin, assistant secretary to the Royal Swedish Commission for the Chicago fair, have arrived in this country. Being interviewed, they said that the Swedish exhibit would be one of the finest at the fair. Mr. Leffler said the Government had appropriated 350,000 crowns, or about \$100,000, for the exhibit to be sent to Chicago, and that that amount, in proportion to the population of other countries, was the largest appropriation made by any European country. "The Swedish Government is taking more than ordinary interest in the fair," said Mr. Leffler, "and it has done something in the way of appropriating that no other country has thought of. In addition to the 350,000 crowns for the exhibit, the kingdom has appropriated 50,000 crowns to be used in sending the mechanical engineers of the country to the fair. Sweden regards the exposition as a great educational institution, and it wants its mechanical engineers to get the benefits of a visit to Chicago, and the 50,000 crowns is for the purpose of assisting them to get there. The exhibit left Sweden on March 2, and the articles will be in their place in our building at the fair grounds by April 1. The most prominent articles of the exhibit will be of iron and steel. The other articles will be in clay, cement, wood pulp, porcelain and wick. Our art exhibit will be comparatively small, but it will prove to be a surprise to the judges in the art department. There are only about 75 exhibitors in this department, but some of the most celebrated artists of Europe have contributed, and among the 200 works in oil, pastel and water colors some superior work will be seen. Two of our great sculptors, Kasselberg and Björjesson, have contributed some of their skill to the exhibit."

Europe at the Exposition.

Theodore Stanton, resident commissioner of the fair in France, has collected reports from the various European commissioners as to the part that their respective countries will take at the coming exposition. From these reports, Mr. Stanton says, "One is readily convinced that the artists, inventors, manufacturers and farmers of the Old World will carry off many and signal honors at Chicago." Germany, France, Russia and Denmark in particular will

make a great showing at the fair, while Sir Henry T. Wood writes that while machinery will not be so good as in previous British sections, "it is expected that Great Britain will quite maintain the position she has always occupied at the international exhibitions," despite the fact of "a certain disinclination on the part of her manufacturers to take part in any more exhibitions." The collection of pictures will be "extremely good;" scarcely any of the best-known artists will be unrepresented, and in view of the great exhibit Germany is preparing in manufactures, it is fair to presume that Great Britain, however averse some of her manufacturers may be to incur the expense, will be sufficiently awake to her commercial and manufacturing interests to make every effort to hold her own in Machinery Hall with a rival that has been pressing her close of late years. The markets of the world are open to the winners of the Columbian awards, a fact that every manufacturer fully appreciates, whether in Europe or in America. Supremacy in manufacturing, like supremacy in politics, in art, in literature, in everything in fact in life, is never conferred once for all. The prize medalists of Paris in 1889 in commercial and manufactured articles must add to their record "Columbian Exposition, 1893," or make way for their latest and more enterprising competitors. Championship in every article of manufacture or art, like the championship in pugilism, can be held only on the ground of being able to hold the field against all comers.

There is no reason to fear, therefore, that in all the infinite variety of articles that enter into commerce between the different nations of the world, or in the higher realm of art and artistic manufacture, the progressive nations of the world will not be adequately represented. The eager demands for space in the various departments of the exposition long ago gave evidence of this interest in the fair, and if any further testimony were needed it is supplied by the reports of the commissioners of the respective countries of Europe.

The Canadian Pacific Exhibit.

Five of the finest cars manufactured by the Canadian Pacific Railroad were hauled into Jackson Park on the 15th and installed in the Transportation Building as the exhibit of that railway. Every car is of mahogany. The wood for the exterior comes from the forests of Honduras and is polished to the smoothness of plate glass. The interior is of light mahogany known as *prima vera*. The engine which ran at the head of the train did not have steam up, as the exhibit was hauled by another engine. The train is 400 feet long. The entire display was manufactured at the Montreal shops.

General Passenger Agent McNicoll witnessed the installation of the cars and said:

"The train is not purely for exposition purposes. It is a perfect representation of the standard cars in service on the Canadian Pacific. All of our latest passenger coaches are of mahogany, and the engine is a type of half a dozen which are now employed on the line. This particular train will be run between Chicago and Montreal when the exposition closes."

The coaches will be landed on the track alongside the passenger train of the London & Northwestern of England. It was the intention of the Canadian Pacific to institute a comparison between the railroad accommodations on this side of the water and those furnished in Great Britain.

The baggage car is of the standard type, and its length is 63 feet 8 inches. It weighs 59,000 pounds, and has plate glass wherever glass is used. Its exterior

finish is mahogany, the same as the coaches.

Next to it is a second-class car. It looks, however, as fine as the others. It is intended for sleeping purposes as well as being a day coach. The furnishings are of leather and the second-class passengers who ride in it—the capacity is 64—will be furnished with a smoking compartment as well as lavatory and other modern accessories.

Next to the second-class is a first class coach. When it was run over the scale at Montreal, it weighed 32½ tons and has a capacity for 56 passengers. Here begins the work of E. Colona, the architect of the company. He has designed the interior of the coach after the early Italian Renaissance and the furnishings are of copper red plush with white mahogany and old oak, upholstered with olive corduroy. To break the tunnel-like appearance of the interior of the average coach this one has two arches, giving an air of coziness and comparative seclusion. There is a smoking compartment at one end capable of accommodating six passengers, and at the other another compartment of like size for a sitting room.

In the dining car "Savoy," which is 70 feet 10 inches long, and weighs 42½ tons, there is a capacity for 30 passengers. The Italian Renaissance prevails in the architecture, and the leather work is of yellow brown with carpets of old India rug pattern.

The last car in the train is a sleeper and bears the title "Satsuma." This is the heaviest coach of the lot and weighs 47 tons. Forty-four people may sleep in it. The plush trimmings are of sage green color. The ceiling is paneled and the interior architecture is of the Spanish Renaissance. The staterooms are *en suite*. Old bronze is the finishing of the metal work.

When the engine which heads the train is fired up it will be capable of hauling ten coaches at the rate of 60 miles an hour. The drivers are 5 feet 9 inches in diameter, and when the machine is loaded up with water and fuel it will weigh 106 tons. It has six drivers.

From one end of the train to the other there are mahogany bronze and brass finishings. It is vestibuled throughout, electrically lighted, steam heated, and has all the latest signal, brake and coupler devices. The cost of the exhibit is estimated at \$70,000.

Mines and Mining Far Advanced.

The Mines Building, which will contain iron and steel products, is in the hands of exhibitors. Some of them moved in weeks ago and commenced to build the pavilions in which their metals will be shown, but the big crowd came last week. Seventeen States, seven foreign nations and dozens of individual exhibitors have laborers on the floor and in the gallery getting their shows ready. Chief Skiff says: "Every exhibit for this building will be in place before the opening of the fair. Most of the exhibitors have assured me that they will have all their work done by the middle of April—two weeks in advance of the opening. Some of them may be a little later. They may not get their displays arranged until a few days before the opening, but most of the States, nations and individual exhibitors will be ready before the required time. During the last few weeks we have received many requests for space in the Mines Building—in fact, as many as came in during the preceding three months. Many of them were very desirable displays, perhaps as good as we will have, but the space had all been assigned, every inch of it, and we could not take the late comers in."

Five of the greatest colleges of Germany have united in sending a collection from their mineral museums. "It is a superb

exhibit," Mr. Skiff remarked, "perhaps the finest that has yet been sent to this country. We reserved 5000 square feet for it in the galleries."

An interesting display for the Mines Building that came last week was the model of a quicksilver mine from New Almaden, Cal. J. P. Randol, superintendent of the mines, made the model some time ago and gave it to the Government Museum. The managers loaned it to Mr. Skiff, to be shown in connection with the exhibit of mercury which is being prepared by Professor Christy of the University of California. By a system of glass panes, arranged carefully, the complete workings of the quicksilver mine are shown in this model.

The American Tin Plate Association have telegraphed Chief Skiff that a good showing would be made. The members

for visitors. An unsurpassed view of the grounds and buildings will be afforded and it will probably be the most extensive lofty promenade in the world. Up to the height where the wall is to be a distance of 250 feet. But when the sight-seers have reached the landing it will not be to find themselves in a narrow coop but on a broad walk, and if the proposed plan is carried out the visitor can travel nearly one mile in rounding the roof of the building. The Hale Elevator company have been awarded the contract for four elevators to run to the roof, and a fee will be charged for the ride.

Feature of the Allis Exhibit.

The E. P. Allis Company of Milwaukee will have in their exhibit at the World's Fair a contract made by James Watt and his partner for the construction of an

work, and the exposition will be opened as advertised, and as the act of Congress requires.

The exhibit from Funchal, Madeira, has arrived, and is being installed in the transportation exhibits department. It consists of a bullock car, yoke and tongue, sledge hack, mountain sled, hammock and two discodels.

Several steam yachts were received last week from the Gas Engine & Power Company of New York for installation in the transportation department. This firm are building two steam launches for the use of the Director General and Lieutenant Baker.

An "anthracite needle," which required two cars for its transportation, reached the Park last week. The only other needle known which compares with it in size is Cleopatra's. The anthracite column came from Pennsylvania as a sample from its hard coal mines.

Russia's exhibit was shipped March 11. That Government has abandoned its intention to erect a characteristic national house as headquarters. The house was entirely framed and set up in St. Petersburg, but the ice blockade in the River Neva prevented its being shipped in time to reach Chicago May 1.

Mr. Ferris is rushing rapidly skyward the construction of his big wheel on the Midway Plaisance. Four towers to be used as false work are completed, and their tops are 235 feet above the ground. The making of foundations has proved an unexpectedly difficult task. The foundation stones, or, rather, concrete, had to be placed 40 feet below the surface of the ground.

Peter Wright & Sons, an English firm, have sent 120 anvils for exhibit in the machinery department.

Laird Bros. of Birkenhead, who are among the leading shipbuilders of Great Britain, have sent to the fair 65 cases of models of ships, including sailers and steamers.

The price of admission to the grounds has been raised to 50 cents to discourage visitors, who have latterly grown so numerous as to impede the work of preparation.

The Westcott Independent Lathe Chuck.

The Westcott Chuck is claimed by the makers, the Westcott Chuck Company of Oneida, N. Y., to be stronger than any other independent chuck, because the end thrust and strain come upon the chuck body at its strongest points. This result is accomplished by providing each jaw screw, A, Fig. 4, with a steel carrier, C, which is threaded on one side and fastened by a set screw, B, one-half of which has a bearing on the screw carrier and the other half in the body of the chuck, the set screw being long enough to secure great resistance. The thrust does not come at one weak point, as in the usual construction, but is distributed so as not to spring or break the chuck body. The screw carriers are adjustable, and it is claimed that upon this depend merits which are new and of great consequence. When the chuck is required to hold work larger than its outside diameter, the steel screw carriers are drawn outward, together with the jaws and their adjusting screws, thereby retaining the full thread-bearing between the screw and jaw, the screw carrier still supporting the jaw; the desired capacity is thus obtained without injury to the chuck. Should the jaw screw cut from need of oil, or become clogged with chips and dirt, the set screw can be re-

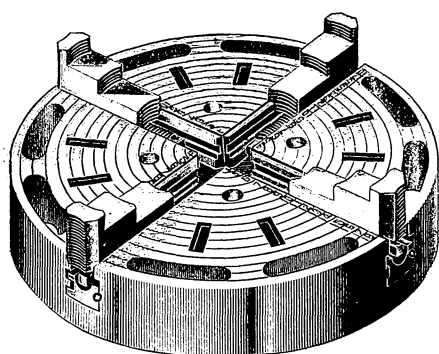


Fig. 1.—Jaws in Central Position.

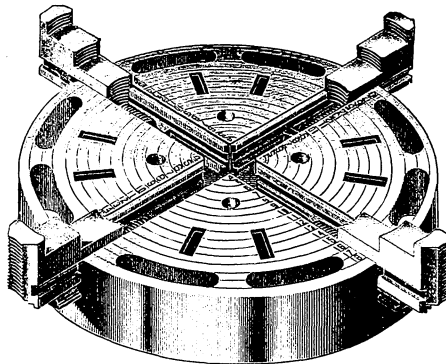


Fig. 2.—Jaws Extended.

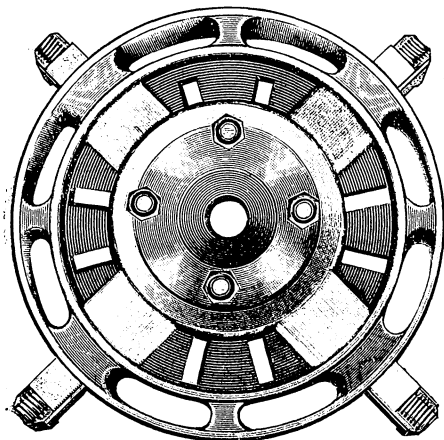


Fig. 3.—Rear View.

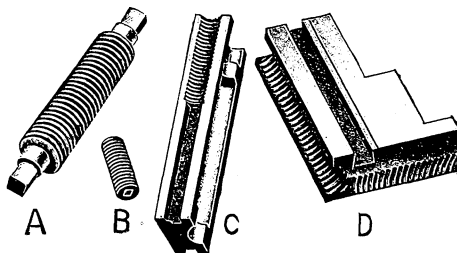


Fig. 4.—Parts of Chuck Detached.

THE WESTCOTT INDEPENDENT LATHE CHUCK.

have been given the entire south gallery for their exhibit, and are now arranging a division of the labor of putting the plate in attractive array.

An oil well supply company will make an extensive showing of all the machinery used in sinking oil and artesian wells. This will be in a special building near Machinery Hall, although a part of the mines show. The company propose to put their machinery to practical use, and during the fair it will sink a well 4500 feet deep.

West Virginia, Virginia, Utah and Montana have their pavilions well under way. Michigan and Missouri have been working nearly a month. The Ohio board have sent in several carloads of building stone recently to be used in the mineral house of the Buckeye State. All the Colorado displays are in the building.

Promenade on the Roof.

Around the lofty roof of the Manufacturers' Building there is to be a promenade

engine. In 1796, some years after Watt had built his first engine, the Birmingham Flour & Bread Company wanted an engine and the firm of Boulton & Watt, consisting of Matthew Boulton and James Watt, agreed to build it. A contract, as long and formal as a State document, was accordingly drawn up and signed and sealed. The contract, which has been carefully preserved, passed into the hands of Sir John Benjamin, a wealthy mill owner of Birmingham, Eng., who desired it to be exhibited at the World's Fair, and he loaned it to the Allis Company, in whose vaults it now is. It is insured for \$2,500.

Items.

The exposition management has made arrangements to supply electric lights at night in all buildings where night work will be required to complete the installation in ample time for the opening May 1. Nothing will be permitted to interfere with the rapid progress of installation

moved and the screw carrier driven out, together with the jaw screw and jaw.

The chuck body is formed with holes extending through it for convenience in bolting light work to the chuck, such as pulleys, whose rims might be injured by the pressure of the jaws. These chucks are made with two, three or four jaws, or with special jaws.

Trial of the Dynamite Gunboat "Vesuvius."

Ever since the "Vesuvius" was placed in commission, almost three years ago, spasmodic efforts have been made to test the efficiency of her armament, but no thorough or satisfactory proof of her capability had been shown until the trials just completed were made. The trials of two years ago made in Chesapeake Bay were extremely unsatisfactory and inconclusive, as the ranging of the guns had not been done previously to the firing and nothing was definitely known about their accuracy. Still enough was ascertained to induce the board having charge of the trials to recommend that further experiment be made.

Had there actually been a war with Chili, at the time hostilities threatened to break forth, the "Vesuvius" would have gone down to the scene of trouble and taken the chances of accuracy of range and certainty of action on the part of the fuses. At that time orders were given to hurry up her armament and get her projectiles ready for service; but when the war cloud blew away the hurry was no longer apparent, and it was not until February of this year that she was reported ready for her trials. Strange as it may appear, even at that time the fuses for her guns had never been tried and the inventor, as well as others interested in the trials, had no idea whether or not the mechanism would work properly.

Preliminary Work.

A programme that was intended to bring out the efficiency of the pneumatic system, the accuracy of the guns, the reliability of the fuses, and the general adaptation of the vessel for purposes of naval warfare, was drawn up and a board of naval officers was ordered to conduct the experiments. The ranging of the guns was left entirely with the commanding officer of the "Vesuvius," the board taking up the firing from the point at which the ranging practice ceased.

The vessel was moored to a wharf at the naval station, Port Royal, S. C., in the Beaufort river and the firing was done with all three of her pneumatic guns, the fall of the shots being plotted with theodolites placed at favorable stations on the river bank along the line of fire.

Firing Blanks.

The projectiles were what is known as sub-caliber "blanks." This means that the diameter of the shell was less than that of the gun, the former being 10 inches and the latter 15 inches. Gas checks of wood are secured about the rear end of the projectiles, and wooden centering pieces are placed about their forward end to insure there being no balloting or striking of the projectile against the gun during its passage along the bore. Both of these appendages flew from the shell as it left the muzzle of the gun. The term "blank" signifies unloaded projectiles.

The maximum range used was a little over 2000 yards, and the minimum about 500 yards for one of the guns, and somewhat less for the others. These points were very carefully established by a number of shots, the remainder of the projectiles being strung along between the

points thus found. All of the shots were plotted accurately, a record of their distances and the loss of air pressure, with the necessary setting of the valves to insure that pressure, being recorded. From this data curves were struck and in the subsequent practice were considered as the standard curves, the effort of the inspecting board being to see how closely the guns would duplicate the results obtained when the vessel was firing for accuracy. The ballistics of the "blanks" were just the same as the loaded or "live" shell, so that the firing throughout was under as similar conditions as it could be made. Owing to some slight mechanical differences in the fitting of the valves for the middle gun of the three, it gave much the more satisfactory results during the accuracy practice and more nearly reproduced the original curves; still the accuracy of the other two improved remarkably during the progress of the firing, particularly after some slight repairs had been made to the buffers and washers used in the valves.

The original allowance for accuracy practice was 24 projectiles, or two shots from each gun at distances of a mile, three quarters of a mile, a half mile and one-quarter of a mile, but when this allowance was expended it was found that the curves were not being duplicated, and that additional shots were necessary before proceeding to take up the firing while the vessel was under way. Consequently, a dozen more shots were fired at the ranges most needing attention; that is, those that had shown the greatest departures from the original curves.

Before proceeding to the results attained with loaded shell, it would be not out of place to state that there was still further accuracy in firing after it was shown that the fuse failed to function properly. Seven shells, loaded with 200 pounds of wet gun cotton, had their charges drawn and the spaces filled with sand and wood so as to have the same weight and same position of center of gravity. An examination of the rectangles made by the practice thus far held showed where additional shots were most needed, and these seven were fired in accordance with the information derived. One result of this attempt at accuracy was the showing that the guns were more inclined than at first to duplicate their work.

Construction of Shells.

It might be well to state that the dummies were made of spirally welded tubing, whereas the live shells were smooth steel boiler tubes, with heavy brass heads, in which were sealed the fuse, primer case, &c. Still the firing of the two was so nearly alike that it is hardly probable that the flight was affected by the rougher surface of the dummies.

Flight of Shells.

The time occupied by the shell in its flight over the 2000 yard range was $11\frac{1}{4}$ seconds; that over the 1500 yard, $9\frac{1}{4}$ seconds; over the 1000 yard, 8 seconds, and over the 500-yard, $6\frac{1}{4}$ seconds. During its flight the projectile was always in plain view its highest point in the trajectory probably being about 500 feet. As it left the gun the wooden centering disk and gas check flew several hundred yards, leaving the rotating vanes at the rear end of the projectile free to take the air and give the rotary motion necessary to secure accuracy of flight. It must be remembered that the guns are smooth bores set at an angle of 18° , with the horizontal end built solidly in the forward part of the ship, which acts as the gun carriage. As the shell leaves the muzzle its rear end gives a kick to one side and there is a gyratory motion perceptible along the trajectory until its apex is reached. When the projectiles strike the water there is occasionally a rebound

ing, or ricochet, as it is called, and even when they do not rise above the water they come up close to the surface, then turn down again and once more rise toward the surface, an action very much like that of porpoises coming up to blow and then diving again. From photographs, taken as near as possible to the point of fall, it was found that the angles of arrival of the projectiles varied from 24° at the 2000-yard range to $15\frac{1}{2}^\circ$ at the 500-yard range. And with this data, in addition to other already obtained, the probable rectangles upon which shot fired at the various ranges would fall were calculated. A vessel about the size of one of the large cruisers was considered as the target. The lateral deviations being so small, it was not thought necessary to take them into the calculation. The increasing confidence in the accuracy of flight of the projectiles was quite apparent as the trials progressed, the observing boats drawing continually closer to the line of flight.

Probable Effect of Shots.

If the cruiser representing the target were broadside to the "Vesuvius" guns at 2000 yards in smooth water eight out of ten shots from the middle of the three guns would strike her, with the probability of any one of the eight being sufficient to put the ship out of action if it exploded about her deck. In fact it is hardly likely that the ship would remain afloat if the full 200 pounds of gun cotton were properly detonated in any portion of the vessel. If the vessel were bows on to the "Vesuvius" nine out of ten would strike her if fired from the same gun. This is the best showing at any of the ranges, the accuracy being much more apparent at the most distant range. The greater rapidity with which the projectile flies and the consequent greater effect of the rotation feathers to steady the projectile in its flight may in a great measure account for this. The worst showing at 1000 yards, the shortest range at which there were sufficient data to base a reliable deduction, was with the port gun. When the cruiser was considered as being broadside to the guns only two and one-third shots out of ten would be effective. When the cruiser was bows on to the firing about one-half of the shots fired would be hits.

It must be carried in mind that while the broadside target is a much wider one than when the vessel is end on, the very fact of her being over 300 feet in length, added to the slight lateral departure of the projectile from the line of fire, presents what can be considered as a rectangle that would receive all shots falling within 300 feet of each other. Another factor enters into the accuracy calculations, and that is the under water, or torpedo effect, of which there is a considerable amount. A large number of observations made to clear up this point showed a distance of under water flight of about 40 yards to be the mean, and this amount enters in the above probabilities of hitting the target.

(To be continued.)

Press dispatches state that a syndicate of Boston men have obtained an option on the St. John (N. B.) Rolling Mills, and an agent of the syndicate is endeavoring to obtain the four big manufacturing firms of Peck, Benny & Co., Pillow & Hersey, Montreal Rolling Mills and Abbott & Sons. Options have been obtained on the New Glasgow and other Nova Scotia steel plants.

Chief-engineer Brown reports that during the year 1892 the Pennsylvania Railroad used 47,176 tons of rails, and that 224 locomotives and 4000 cars were built by the company.

The Hurley & Shea Cutting-Off Tool.

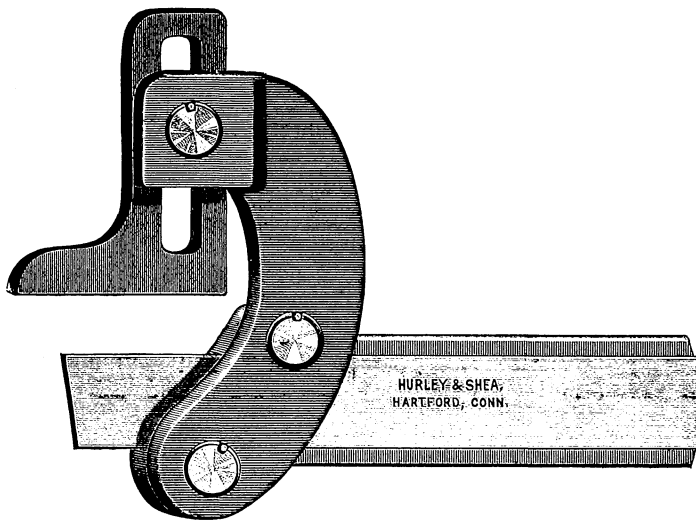
Hurley & Shea of Hartford, Conn., are introducing a new cutting-off tool, designed to cut off work 12 or 14 inches from the chuck without danger of breaking the blade or spoiling the work, and without the use of a center rest. This is done by setting the tool or blade cutting edge on the center of the work, and then dropping the slotted foot rest on the top of the work to prevent the work from raising up on the tool. The makers claim a great saving in blades by the use of this holder, and that it would be almost impossible to cut off work at this distance from the chuck without this tool or some other means of holding the work fast. Another important feature is that the work never breaks off until the tool reaches the center, consequently leaving no part of the work to be filed or ground off, as with the other tools, where there is at least $\frac{1}{2}$ inch to be filed off. This tool is made of steel drop forgings and case hardened. It cuts off work from nothing to $2\frac{1}{2}$ inches in diameter. There

draft system alone saves 20 per cent. of coal. These improvements and the style of the engine make it almost the equal of a triple compound engine. The boat will have one rudder at the bow and another at the stern, and she will be the first vessel on the lakes, aside from the car ferries, to adopt this innovation. The bow rudder is set into the hull and is a part of the stem, its shape continuing the lines. It rests in a pintle, and when the vessel is steadily forging ahead it is locked in place, making it immovable.

The Birmingham Steel Question.

The following report of a committee of the Tennessee Coal, Iron & Railroad Company, dealing with the question of manufacturing steel in the Birmingham district, will be read with interest:

The committee appointed under resolutions of this board to look into the subject of the manufacture of steel met at Birmingham, Ala., on January 5, 1893, and organized by electing A. M. Shook chairman and T. H. Aldrich secretary.



CUTTING-OFF TOOL.

is also provided a longer foot rest to take in work up to 3 inches. The blades are made of the best tool steel, and the temper is drawn to the center, leaving the top or cutting edge as hard as fire and water will make it at a low heat.

The steamship, "City of Alpena," launched at Wyandotte last week, will be one of the finest boats on the lakes. Her hull is of steel, divided into watertight compartments by steel bulkheads. The propelling power will be a low-pressure compound vertical beam engine of 3000 horse-power; diameter low pressure cylinder 66 inches bore, diameter high-pressure cylinders 42 inches bore, and 11 feet stroke. The paddle wheels will be of the Morgan feathering pattern, adopted by this company for their great speed without jar or noise. Her boiler will be a double ender, equaling four boilers, with Howden forced draft; capacity, 130 pounds steam pressure. Her maximum speed will be 20 miles an hour. It is not probable, though, that 18 miles will ever be beaten, unless it be on her trial trip. The running time from Toledo to Mackinac will be a trifle less than 30 hours, and to do this a speed of from 17 to 18 miles an hour will suffice. It is figured that the high speed can be obtained on an economical use of fuel. All water will be heated to the boiling point before it enters the boiler. The Howden

Your committee construed said resolutions to confer upon it the following duties and powers:

1. Is it to the interest of the Tennessee Coal, Iron & Railroad Company to erect a steel plant?
2. What process or processes should be employed?
3. At what point should the plant be erected?
4. What amount of capital should be invested?
5. What means should be employed to raise the necessary capital?

In the investigation of the questions involved it became patent at once that the most difficult one to solve was what process or processes could or should be employed.

In this country there are four recognized processes for the manufacture of steel—to wit, the acid Bessemer, the basic Bessemer, acid open hearth and basic open hearth.

In the manufacture of acid Bessemer, the materials to be employed must be selected to suit the process. The iron used must be of a certain chemical analysis, which restricts the injurious metalloids to very narrow limits, the most essential one being phosphorus, which must not exceed one-tenth of 1 per cent. The same rule applies to the acid open hearth.

In the basic Bessemer process the materials used must also be made to conform to the process. The form of treatment is

practically the same as in the acid Bessemer, the difference being in the lining of the converter, which must be basic instead of acid. In the basic Bessemer practice it is necessary to have a very much larger percentage of phosphorus for the purpose of keeping up the heat in what is known as the "after blow," standard basic Bessemer pig requiring from 2 to $2\frac{1}{2}$ per cent. phosphorus.

The basic open-hearth process contemplates a much wider range as regards the character of materials than can be used. It is a process that can be adapted to the materials to be used, the only restrictions that are absolutely necessary being low silicon and low sulphur.

In the consideration of these questions, your committee is unanimously of the opinion that the Tennessee Coal, Iron & Railroad Company can only afford to make steel out of their own raw materials and products, and at a point where they can obtain the largest amount of liquid metal at the lowest cost. We do not deem it advisable to submit a report that would contemplate the manufacture of an iron other than is now made at our present plants at the lowest cost of production. This necessarily eliminates the acid Bessemer and acid open-hearth processes on account of the large percentage of phosphorus in our ores, and while it would be possible to manufacture a basic Bessemer pig carrying as much as 2 per cent. of phosphorus, it would necessitate the abandonment of what are known as Red Mountain ores and the substitution of the brown ores of Georgia and Alabama. This would materially increase the cost of pig iron, to what extent it is impossible to say, as the mining and bringing together of 1000 tons of brown ore daily has never been attempted in the South.

For the above reasons the consideration of the process to be employed was reduced to the basic open hearth. This process can deal with a pig iron carrying any reasonable percentage of phosphorus; the less the better, however. Low sulphur is essential, but the question of sulphur is not a serious one with Southern irons, except where the use of white and mottled irons is contemplated. All the higher grades of Southern coke irons are comparatively free from sulphur.

This leaves silicon as the only substance to be dealt with. The present method of working the basic open-hearth furnace contemplates the use of pig iron low in silicon, and also the use of a large percentage of scrap, usually from 25 to 50 per cent. The necessity for scrap is to reduce the silicon and carbon in the charge. The difficulty of obtaining scrap in large quantities in the South is so great that your committee could not recommend the adoption of this process unless some means could be employed which would avoid the necessity of using scrap. The reasons why scrap cannot be obtained in the South are that there are so few manufacturing establishments, and the only scrap obtainable is agricultural and railroad scrap. The greatest source should be from old rails, but the introduction of steel rails in the South is of such a recent date that a very small percentage has been worn sufficiently to be sold as scrap.

It is true that white and mottled iron can be used with a relatively small percentage of scrap, but in our ordinary furnace practice, when white and mottled irons are made, the sulphur is increased to such an extent as to greatly impair the value of the steel.

Gray forge pig is the grade upon which our furnaces can be run most successfully and at the lowest cost. This iron contains by analysis usually about 0.75 per cent. of phosphorus, from 1.50 to 2.25 of silicon, and from 0.01 to 0.04 sulphur. To use this iron without scrap, the silicon must be practically eliminated before it goes into

sintered magnesia from the raw material is about 50 per cent. An analysis of a mixture of sintered magnesia derived from an intimate mixture of the product of the different quarries showed the following: 3.40 per cent. silica; 0.82 per cent. alumina; 7.70 per cent. oxide of iron; 1.70 per cent. of lime, and 85.34 per cent. magnesia. The lower magnesia is in lime, the more difficult is its combination with silica to a silicate. For this reason it is possible to build Dinas brick directly on a basic magnesia hearth.

In making a basic hearth of magnesia, finely ground sintered magnesia is mixed with five parts by weight of clean basic open-hearth cinder containing from 10 to 15 per cent. of silica, $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent. of alumina, and 18 to 30 per cent. of lime. Some works use hammer or roll scale in place of the cinder. Inclusive of the material used in building the furnace the consumption of magnesite per ton of steel made is 30 to 40 pounds, from 100 to 200

line in proper repair. Eternal vigilance is the price of success in this respect. Otherwise there is little trouble.

The Presto Drill Chuck and Collets.

The engravings here presented illustrate the Presto drill chuck and collets, for the rapid change of drills without stopping the spindle of the drill, made by the Woodruff Mfg. Company of Hartford, Conn. Lifting the ring on the lower end of the chuck, as shown in the first engraving, releases the collet holding the drill, allowing it to drop out and be replaced by another without requiring the stopping of the spindle. The dropping of the ring locks the new collet and drill in place. The locking ring is so made that it may be held stationary while the chuck revolves in it. A complete set is composed of a chuck and nine collets, three of each of the Morse standard tapers. The object of

work perfectly. No nuisance is produced, although house refuse is burnt without screening; and the clinker formed amounts to one sixth of the total weight of the fuel. This clinker is used as hard core for road-making, &c. The steam is used in connection with a system for concentrating sewage, and for driving engines. At Shrewsbury Gas Works a Perret furnace burns house refuse occasionally; and it is suggested that, with the addition of 10 or 15 per cent. of coke dust or ashes, this class of rubbish could in many cases be burnt with very economical results.

Treasury Decisions.

Guns in parts (United States vs. Schoverling).

Before the United States General Appraisers at New York, December 30, 1892. In the matter of the protests, 8684b, &c., of Henry Keidel & Co., et al., against the decision of the Collector of Customs at Baltimore as to the rate and amount of duties chargeable on certain guns in parts, imported per vessels and at dates named in the schedule annexed. Opinion by Somerville, General Appraiser.

The merchandise covered by the protests in these cases consists of three classes, which may be described as follows:

1. Gun barrels which are parts of breech loading shot-guns, made of metal.
2. Gun stocks, made of wood, with locks and furnishings made of metal, and attached to the stocks in the usual mode.
3. Gun stocks, with metal locks and furnishings, and gun barrels of metal, invoiced, packed and imported separately, and not as entireties.

The goods were assessed by the Collector in each case at the rates provided for completed firearms of the description mentioned in Paragraph 170 of the new tariff act of 1890.

In some of the cases the importers were compelled by the Collector to make simultaneous entry of the different parts of these guns against their objections.

The contention of the importers is that the articles of merchandise are only parts of firearms and are not completed shot-guns within the meaning of said paragraph of the law, and that, not being specially provided for, they are dutiable according to the materials of which they are respectively made, or according to the component material of chief value.

It is particularly claimed in the protests that the gun barrels are dutiable as manufactures of metal, under Paragraph 215 of the present tariff act, and that in case of the gun stocks the metal locks and furnishings or mountings constitute the component material of chief value, and that they are also dutiable under said paragraph at 45 per cent. ad valorem.

There is an alternative claim, made in some of the cases, that the gun stocks are dutiable, under paragraph 230, new tariff act, as manufactures of wood.

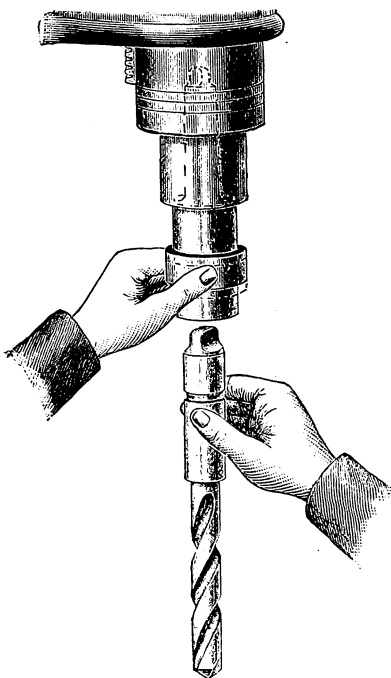
We find as facts:

1. That the goods are, in each case, of the description above stated, and, more particularly, that they consist of gun barrels and gun stocks of the material, kind and value shown by the respective invoices and entries and by the several reports of the local appraisers.

2. That these articles are parts of guns, and not completed guns, there being no evidence that they were ever assembled or brought together as entireties on the other side whence exported.

3. That metal is the component material of chief value in the gun stocks, the value of the metal locks and mountings being shown to be from two to three times more than that of the wooden stocks alone.

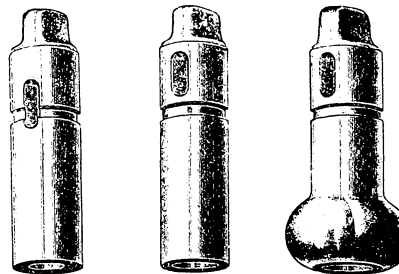
These findings of fact bring the importations within the decision of the United States Supreme Court in the recent case of



Showing Method of Using.



The Chuck.



Collets for Morse Taper Shank Drills.

THE PRESTO DRILL CHUCK AND COLLETS.

pounds being used per heat for repairs. It is claimed that a good rammed magnesia hearth will outlast three Dinas roofs.

President Ayer, of the National Electric Light Association, at the St. Louis meeting, said in discussion, dealing with the question, at what distance is long distance transmission commercially feasible? After an examination of the profit and loss possibilities of a large number of plants of all descriptions, the author felt safe in saying that power transmission to a central station would, unless the cost of the development of the water power was exceptionally great, almost universally pay at distances of 10 or 12 miles. It will frequently pay up to 20 or 25 miles. Now and then, under extraordinary conditions (very expensive coal or very cheap water power) it will pay up to 40 or possibly even 50 miles. The author had never personally investigated a proposed transmission over 50 miles that gave any promise whatever of financial success, but the time may come when such a case will appear; and if it does the electrical part of the enterprise can be successfully carried through. The greatest difficulty in operating over long distances is the difficulty of keeping a long

having three collets of each taper is to allow a change of drills to be made without stopping to drift the drill from the socket.

The Perret System of Burning Waste Fuel.

In a paper recently read before the North of England Institute of Mining and Mechanical Engineers, Bryan Donkin, Jr., dwelt upon the generation of steam by forced blast, with special reference to the Perret system of burning dust and waste fuels. In remarking upon the existence of a demand for improved means of getting rid of all kinds of refuse that can only be described as relatively combustible, Mr. Donkin suggested that in the Perret furnace ash-bin refuse and other dusty and poor fuel may be burnt economically for the production of steam. In this way municipal authorities might obtain power which could be utilized in generating electricity for lighting purposes. At Warrington, England, for example, the borough engineer has several steam boilers with Perret furnaces at work in conjunction with the Manlove and Alliott destructor; and the combination is reported to

United States vs. Schoverling et al. (13 Sup. Ct. Rep., 24), where it was held that importers had a legal right to import separately parts of breech-loading shot guns or other firearms, and to have them assessed for duty according to the material of which they are composed, at least in the absence of all evidence that the goods had ever been assembled together as completed guns prior to exportation.

Following that ruling, we sustain the protests and reverse the Collector's decision in each case, and authorize him to reliquidate the entries accordingly.

Dutiable Weight of Pig Lead.

Before the United States General Appraisers at New York, February 6, 1893. In the matter of the protests, 16,578b and 16,737b-2, of Balbach Smelting & Refining Company, against the decision of the Collector of Customs at Newark, N. J., as to the rate and amount of duties chargeable on certain pigs of lead, imported per "City of Alexandria" and "Yumuri," August 17, 1892. Opinion by Wilkinson, General Appraiser.

The merchandise consists of pigs of lead. The appellants state:

We protest on the ground that pig lead imported into this country only pays 2 cents a pound and that the tariff provides that only lead, if same is chief weight in base bullion, shall pay this rate, while in the above instance we are required to pay for the non-dutiable contents, such as gold, silver, &c.

The claim is that duty should be assessed only on the actual amount of lead in the bullion and not on the gross weight of the pigs. In support of this view the importers cite Department circular of January 8, 1891, which prescribes certain regulations under section 24, act October 1, 1890, for melting and refining imported ores and crude metals in bond.

The special design of Section 24 appears to be to enable ores and metals intended for exportation to be smelted and refined without the payment of duties, although the section provides that the product may be withdrawn from bonded warehouse for domestic consumption upon payment of duties and under such regulations as the Secretary of the Treasury may prescribe.

It does not, however, appear necessary in the present case to inquire into the regulations prescribed by the Department. We find that the merchandise is commercially known as pig lead or lead in pigs. Paragraph 200, N. T., provides a duty of 2 cents a pound for lead in pigs, and we hold that duty was correctly assessed at 2 cents a pound upon the gross weight of the merchandise.

The following table extracted from an article in the *Chautauquan* makes a showing of the world's yearly coal product, not all for the same year, but the nearest approximation obtainable:

	Tons.
Great Britain (1891).....	185,479,126
United States (1891).....	168,566,669
Germany (1891).....	84,347,156
France (1891).....	26,199,645
Belgium (1891).....	19,865,345
Austria (1889).....	8,592,873
Russia (1889).....	6,207,800
Sweden (1888).....	300,000
Spain (1891).....	1,314,147
Italy (1889).....	390,320
Total.....	501,263,081

It may be added that, of the amount given above for the United States, 50,665,431 tons were anthracite mined in Pennsylvania. The total value of the coal output of this country for 1891 is estimated at \$191,092,718.

Japanese manufacturers are asking a curious question, says a British trade journal. How is it that, while the demand for Japanese goods has rapidly increased in Europe and America, the export of these

goods from Japan has steadily decreased? So interesting does this question appear to the Japanese that they propose to spend \$20,000 of Government money to dispatch a commission which shall investigate the matter. It is thought that the reason may be traced to certain wonderful manufactories in Germany, where no samples are thrown away, and whence the unsophisticated tourist can be supplied with antique bronzes, mediæval missals, coats of mail, and Japanese ceramics. It is only when the German manufacturer applies English devices and words that the legal formula, "Made in Germany," has to appear on his handiwork.

An Electrical Transmission Equipment.

One of the latest examples of electrical transmission of power is the extensive plant now being installed by the Western Electric Company at their Chicago works, located on Clinton street, south of Van Buren. Including the recent acquisition of the old stove works formerly occupied by the pioneer firm of Collins & Burgie, the buildings now have a frontage of about 700 feet on Clinton street, and depth of 450 feet west, the present height of the original building being seven stories, and that of the addition five. The machinery equipment of the shops is very extensive and includes a large variety of different classes, such as metal working, wood working, lead-pipe making, spinning and textile, and others. Many of these machines require a large amount of power, while others, though comparatively light running, must have perfect uniformity of speed. There is also on use throughout the works a very complete and extensive lighting outfit, comprising both arc and incandescent systems, and necessarily consuming a large amount of power. In the dynamo-testing department there are frequently four or five of these machines in operation at the same time, and the consumption of power is so great as to necessitate the use of a special engine for the purpose. The hydrostatic pumps for the lead pipe presses are also operated by an independent high-speed engine.

The main power supply is furnished by a Brown (Fitchburg) automatic cut-off engine of 500 horse-power, which, although now running at above its rated capacity, is insufficient to meet the requirements of the business. It is the intention, as soon as the electrical transmission system is in operation, to reserve this engine for lighting purposes exclusively—including, of course, the current required for the lamp-testing departments. The present power-transmission system is one of great variety of appliances and methods and of many ramifications, to reach all portions of the numerous departments of the original building. Its extension to the annexed building involved complicated conditions which rendered satisfactory results impossible, without necessitating extensive alterations; and therefore the present plan of radically changing the entire system was adopted.

There are several features of the problem which render an efficient and economical application of even the most improved methods of mechanical transmission a matter of extreme difficulty, to obviate which conditions an entire change in the existing arrangement of the departments and their equipments would be absolutely necessary; in other words, it would involve the tearing up, root and branch, of the immense plant and its reorganization on a basis which, outside of the mere consideration of convenience of transmission, would be in all respects less desirable than the present one. While to a superficial observer the internal economy of the establishment may have the appearance of being a somewhat heterogeneous and haphazard

grouping of departments and processes, such is far from being the case, as the entire arrangement of such details has been carefully planned with reference to the whole, and is the result of years of observation and gradual change and development to meet the requirements as they became manifest. It is clear, then, that any system of transmission which involved such serious changes was practically out of the question, and that, had purely mechanical appliances alone been available, the only admissible plan would have been in furnishing each of the two buildings with its own independent steam and power plants, which would certainly have been a far from economical arrangement.

Briefly stated, the difficulties involved in the distribution of power to meet existing conditions are as follows:

First.—The numerous changes in direction of line shafting, rendered necessary in order to effect the most advantageous arrangement of the machinery of the several departments, irrespective of the source from which the power is derived.

Second.—The conveyance of a large amount of power for a distance of several hundred feet from the prime mover, to point of utilization, as is necessary for driving the new addition. This would require the use of a long line of heavy shafting and the crossing of a 30 foot alley between the two buildings. Then, too, the distribution successively from floor to floor and from line to line requires that each shaft shall be sufficiently heavy to drive not only such machinery as derives its power from the shaft direct, but also all shafts, with their respective loads, successively, beyond it.

Third.—The requirements for power in the several departments and in different parts of the buildings are not, and cannot be, so graduated as to render the distribution a matter of constant decrease in proportion to the distance of point of consumption from the engine. In fact, some of those most remote are unavoidably among the ones in which the greatest amount of power is used; and it follows, therefore, that all intermediate portions of the system must be made heavy enough to effect the transmission, although there may be one or more departments interposed in which the requirements for power are comparatively small. These are by no means all of the points of difficulty encountered, but they are of sufficient magnitude to warrant very serious effort to overcome them either wholly or in part, as may be determined later by the results. As against these points in the order mentioned, the comparative advantages of the electric system may be mentioned as follows:

First.—Any and all changes in the direction of rotation, or its line of axis, which may be necessary to place any individual or group of machines in the most convenient position or location, may be accomplished irrespective of the source of power, and without causing the least additional complication or expense in either the cost of installation or operating expense, as it is merely a matter of leading the conducting wires and locating the motor with reference to the position of the machine or line shaft to be driven.

Second.—The power in any desired amount may be conveyed to any point necessary with equal facility, regardless of distance or direction, the only additional expense being in original cost of copper conductors; necessary to afford sufficient sectional area to prevent loss of current from undue resistance, or, in default of this, against the amount saved in cost of installation must be charged the increased operating expense due to loss of efficiency between generator and motor. In either case the convenience of transmission by wire, as compared with line shafting, is hardly open to question.

Third.—The transmission to the several departments or locations by means of the wires is direct and independent of that of all others, and is not a matter of successive progression through the intervening departments, each of which, therefore, receives only so much power as is suitable for its own requirements. We have considered this matter thus much in detail by way of making it a practical illustration of the admirable adaptability of the electric system. Considered solely from the standpoint of comparison of the mechanical application, and apart from that of relative economy in the transmission of a given amount of power, it is obvious that the question is beyond discussion. Whether or not the economy of the electric system, either by present practice or in possibilities through future development, may enable it to compete with the older methods under average conditions is a question still to be determined, and this can be done only after the most thorough comparative tests in like applications. That such tests will be made in the near future is at least probable, as the subject is one of great importance to manufacturing interests of all classes.

The new plant of the Western Electric Company comprises two 150 K. W. generators, of the multipolar Gramme type, driven by a 350 horse-power automatic cut-off high-pressure tandem compound expansion engine—the latter, made by Russell & Co., of Massillon, Ohio. The 300 horse-power current will be distributed to about 40 motors, ranging from $\frac{1}{2}$ to 35 horse-power each. The latter, of the bi-polar drum type, will be located with reference to the most direct application of the power, and all line shafting will be dispensed with, except in cases where its use is absolutely necessary. The entire power plant, including the battery of four 100 horse-power boilers, is located in basement of the new annex. Owing to the low speed of the generators (255 revolutions per minute), the use of counter or jack shaft is dispensed with, they being belted directly from two independent friction pulleys on crank shaft of engine. This results in a very considerable saving of floor space, and the engine room, 25 x 50 feet, with an L of 20 x 20 feet, provides ample space for the accommodation of plant. A roomy subway under the alley connects the basements of the two buildings, and through this are carried the main conductors for supplying power to the seven floors of the original building. Separate mains lead upward from the engine room, and distribute the current throughout the five stories of annex. These conductors are calculated to be of ample section for preventing undue resistance to the current, and it is expected the efficiency of the system will be but little below that due to the generators and motors.

Tests of these machines have demonstrated their commercial efficiency to be about 86 per cent. of the applied power, varying slightly in the different sizes. The generators are absolutely automatic in their regulation under all changes of load; and this is also true of the motors, the latter governing within five per cent. of their rated speed. As among the latest developments in electrical power transmission, the two machines will be described with full illustrations in an early issue of *The Iron Age*, and for this reason no further reference to them need be made in the present connection. As the installation of the plant is nearly completed, it is expected to be in operation in a short time, when it is the intention of the company to institute a series of very exhaustive tests, to determine not only the economy of the system and its component appliances, but also all points which can have an important bearing on the subject of its universal adaptability to purposes of power transmission.

Freight Notes.

Among the more important questions upon which action was taken last week in Chicago by the General Freight Committee of the Central Traffic Association are the following:

It was agreed that the usual concessions be granted in rates on exhibits for the St. Louis Exposition and Music Hall Association, to be held in St. Louis September 6 to October 22, 1893.

It was decided to authorize rates on articles of iron and steel manufacture between all points in the territory of the Central Traffic Association on the basis of fifth class L. C. L. and sixth class C. L., to take effect April 1 and expire September 30, 1893, unless sooner revoked.

Authority was granted to the Chicago committee to make rates on new rails, iron and steel, from Chicago to Pittsburgh and intermediate points on basis of \$2.75 per gross ton.

It was agreed that commodity rates may be established between points in the territory of the Central Traffic Association on tin plate, boxed, N.O.S., carloads, same as sixth class.

Chairman Midgley has issued a circular declaring that the rate from St. Louis to Des Moines on steel and iron rails shall be \$2.40 per gross ton and 13 cents per hundredweight on fastenings. Applying the differential, the rate for Chicago will be on iron and steel rails \$3.07 and 16 cents per hundredweight on fastenings. These rates are to go into effect April 1.

The Western Freight Association last week made a general reduction in pig-iron rates from Chicago and Milwaukee to St. Paul, Minneapolis, Davenport, Moline, Rock Island, Freeport, Rockford and Elgin. Large reductions in rates were made on lumber and plate iron, bar iron, iron pipe and structural iron from Duluth to Chicago. The lumber rate was reduced to 16 cents per 100 pounds, the old rate being 20 cents, and the iron articles were reduced to 15 cents per 100 pounds, the old rate being 22 cents. These reductions caused decided ill-feeling, but were forced by the Northwestern and Wisconsin Central. A motion to make corresponding rates to Duluth from Chicago was voted down.

Freight Rates.—Freight rates to Chicago on carload lots of Iron and Steel from principal outside sources of supply:

Pig Iron.	Ton.
Birmingham, Ala.....	\$3.85
Chattanooga, Tenn.....	3.60
South Pittsburgh.....	3.47
Cowan.....	3.23
Ashland, Wis.....	2.75
Mahoning Valley, Ohio.....	2.00
Southern Ohio.....	2.00
Western Wisconsin.....	1.50
Central Wisconsin.....	1.15

Steel Billets.

Pittsburgh, Pa.....	\$2.75
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Finished Iron and Steel, Nails, Barb Wire, &c.

	100 pounds.
Eastern Pennsylvania.....	\$0.28
Superior, Wis.....	.15
Pittsburgh, Pa.....	.17 $\frac{1}{2}$
Ohio River points.....	.17 $\frac{1}{2}$
Youngstown, Ohio.....	.15
Cleveland, Ohio.....	.14
Canal Dover, Ohio.....	.14
Toledo and Findlay, Ohio.....	.12
Muskegon, Mich.....	.11
Muncie, Ind.....	.11
Peoria, Ill.....	.08
Springfield, Ill.....	.05

Judge Taft of the United States Court at Detroit issued an injunction prohibiting Chief Arthur of the Brotherhood of Engineers and Chief Sargent of the Locomotive Firemen's Brotherhood from ordering a strike. It restrains either of them "from issuing, promulgating, or continuing in

force any rule or order of any kind" under the rules and regulations of either order "which shall require or command any employee of any of the defendant railroad companies herein to refuse to receive, handle or deliver any cars of freight in course of transportation from one State to another," from and to the Ann Arbor. It also prohibits either of them "from in any way, directly or indirectly, endeavoring to persuade or induce any employees of the railway companies whose lines connect with the Ann Arbor, not to extend to the said company the same facilities for interchange of interstate traffic as are extended by said companies to other railways."

The World's Production of Gold and Silver.

A French review has compiled from official sources statistics as to the annual production of gold and silver throughout the world, the total being given at 206 tons of gold and 1,477 tons of silver, representing a value of \$125,488,000 for the gold and of \$179,248,000 for the silver. The following are the countries which produced most of the precious metals during the past year:

Gold.	
United States.....	\$33,024,000
Australia.....	19,584,000
Russia.....	17,666,000
South African Republic.....	13,248,000
British possessions in Africa and Asia.....	9,216,000
China.....	5,184,000
New Zealand.....	3,648,000

French Guiana, British Guiana, Hungary, Chili, Mexico, Venezuela and Canada each produced between \$1,000,000 and \$1,350,000 worth of gold during the year.

Silver.	
United States.....	\$74,880,000
Mexico.....	52,032,000
Bolivia.....	15,350,000
Germany.....	13,248,000
Spain and France (each).....	2,112,000
China.....	1,872,000

It may be of interest in this connection to review the figures showing the production of gold and silver in the United States during the 20 years since 1871, as given by a recent authority. Between 1871 and 1875, inclusive, the production of gold was 9,475,723 ounces; 1876-1880, 9,530,510 ounces; 1881-1885, 7,730,324 ounces, and 1886-1890, 8,070,324 ounces. Of silver the United States show an output that is constantly increasing. The production of that metal between the five years 1871-1875, inclusive, was 121,262,248 ounces; 1876-1880, 157,622,000 ounces; 1881-1885, 182,900,000 ounces, and 1886-1890, 230,980,000 ounces. Meanwhile the value of the silver ore has declined in proportion to the increase of production. Whereas the former grew nearly 88 per cent. in the 20 years under consideration, the increase in value of the output was only 50 per cent.

The Massachusetts Board of Trade was addressed at a banquet held in Boston last week by ex Secretary Fairchild, who spoke briefly of the currency question, remarking that: "You are going to lose your gold in this country just as surely as the sun will rise. Every time your rate of interest goes down and your prices go up your gold will go. The only way you can hold it is by an enormous amount of interest, such as you have had during the last few weeks. Whenever you return to normal conditions of interest you will find your rate of exchange going up and this thing going on, and the only thing is to bring this country back to the wholesome condition when the laws of nature in our currency will have full play."

The Freeman Universal Mill.

An interesting type of rolling mill has been built by the Totten & Hogg Iron and

The accompanying engravings show the principal features of novelty of this mill, Fig. 1 being a front elevation clearly showing the position of the horizontal and the vertical rolls (of which there are two

the right, this shaft being mounted in suitable bearings in a frame. This frame, its belt and its series of pulleys, is shown in elevation on a larger scale in Fig. 4. The tension of the belt, represented by a

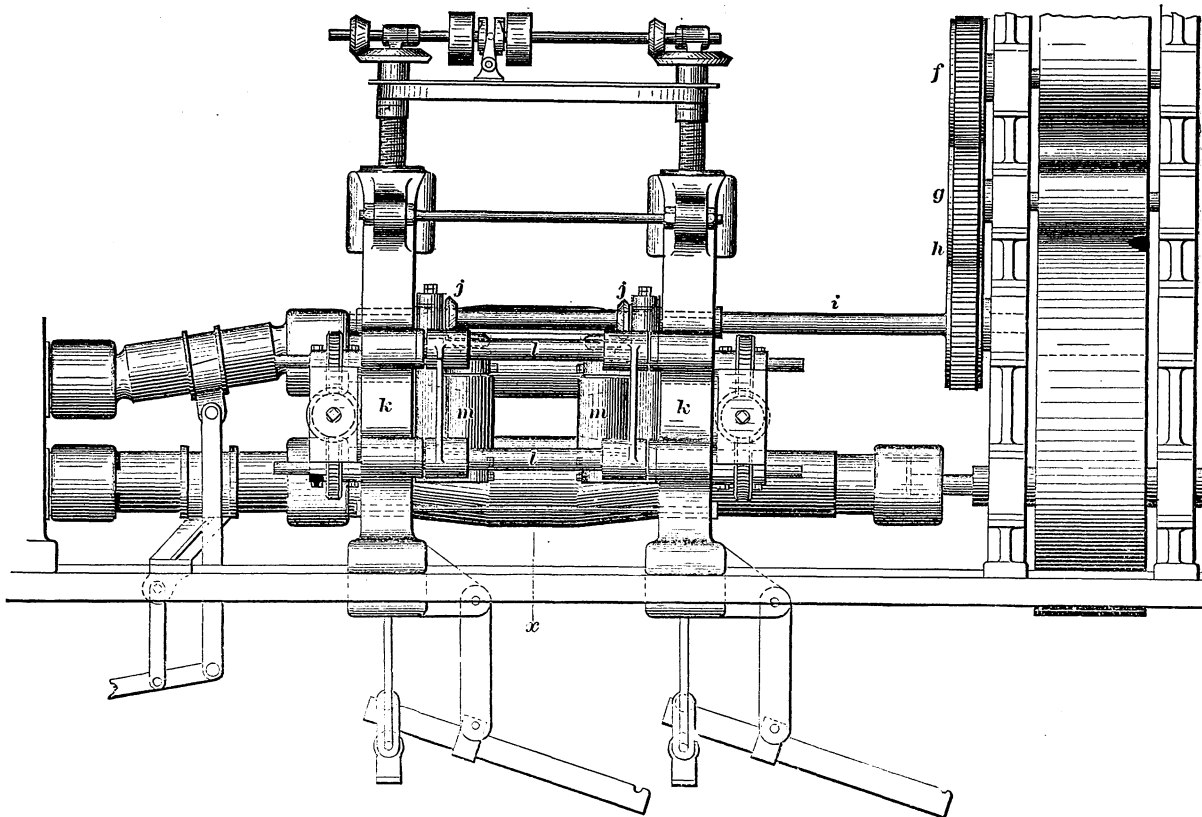


Fig. 1.—Front Elevation.

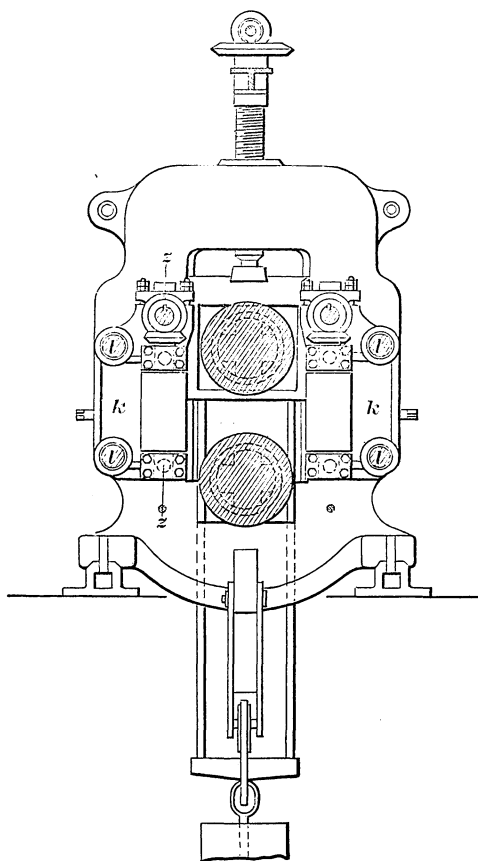


Fig. 2.—Section through *x*, Fig. 1.

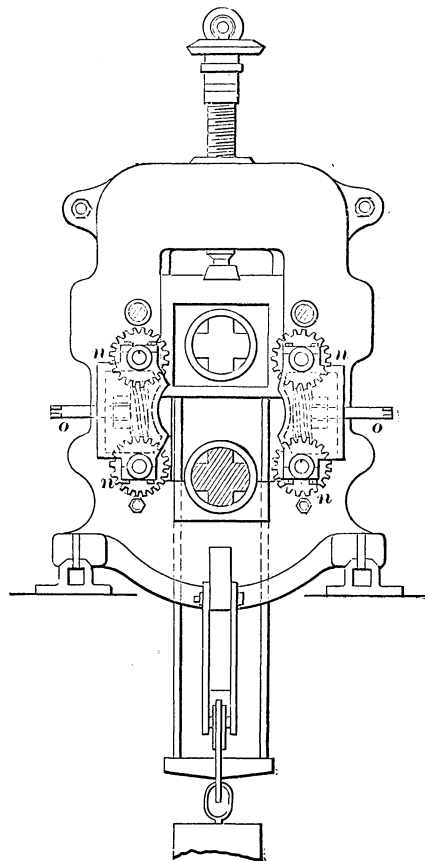


Fig. 3.—End Elevation.

THE FREEMAN UNIVERSAL ROLLING MILL.

Steel Foundry Company of Pittsburgh for the Midland Steel Company of Muncie, Ind., in accordance with the designs patented by F. I. Freeman of Pittsburgh.

sets, front and back), the former being driven in the usual way, as indicated in the drawing. The neck of the lower roll is connected to the shaft of a pulley at

heavy black line, is regulated by a pulley, *a*, Fig. 4, the ends of the shaft of which are mounted in blocks arranged in guides, as shown in Fig. 4. These blocks are

moved up and down by means of rods, *b*, Fig. 4, the upper ends of which are connected to arms mounted on the shaft *c*. The latter is oscillated by means of the dotted rod *d*, at the lower end of which a lug, *e*, acts as a guide. At one end of the shaft of the upper set of pulleys are keyed gear wheels, *f*, which intermesh with idlers, *g*, and these in turn mesh with the gear wheels *h*. On the shaft *i*, Figs. 1 and 4, are keyed beveled gears, *j*, Fig. 1, in such a manner that while rotating with the shaft they are free to go along them. These pinions, which are shown alongside of the upper horizontal roll in Figs. 1 and 2, have hubs which are mounted in bearings formed on the upper part of the carriages *k*, Figs. 1 and 2, which are sup-

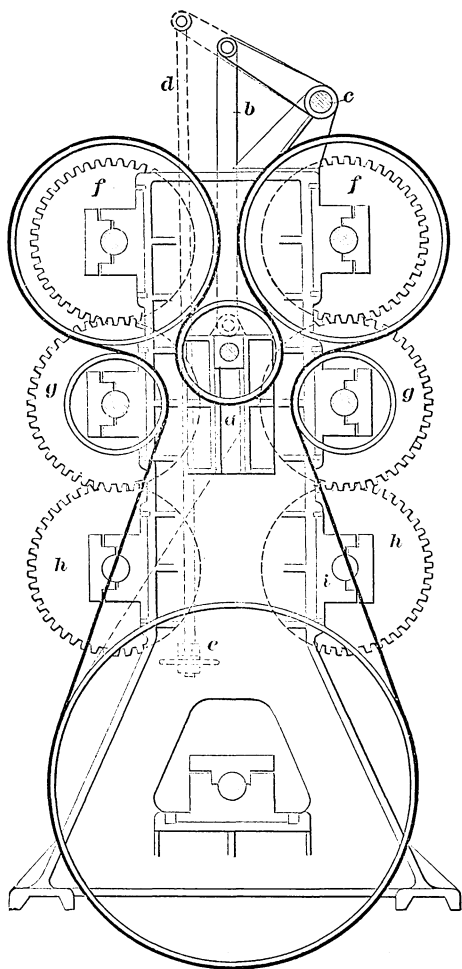


Fig. 4.—Arrangement of Gearing to Drive Vertical Rolls.

THE FREEMAN UNIVERSAL ROLLING MILL.

ported by and slide around the rods *l*, Figs. 1 and 2, their ends being secured in the housings. On the inner faces of the carriages are formed bearings for the vertical rolls *m*, Fig. 1, which have beveled pinions, so that they can intermesh with the pinions *j*.

The carriages are adjusted by means of threaded rods, *n*, Fig. 3, passing through nuts arranged within the housings. The worm wheels shown in Fig. 3 intermesh with the wheels on the shaft *o*, which can be rotated by a wrench or other suitable means. It will be observed by reference to the engravings that since the upper pulleys *f* are smaller than the main large pulley they will be driven at a higher speed than the latter, which rotates at the same speed as the horizontal rolls. As the gears *f*, *g* and *h*, Fig. 4, have equal diameters, it will follow that both the pairs of vertical rolls, *m*, will be normally driven at the same speed, which is greater than

that of the horizontal rolls, the object being to adjust the relative speeds of horizontal and vertical rolls in such a manner that the higher speed of the vertical rolls compensates for the elongation of the bar passing through the mill.

As compensation is only necessary in the set of rolls operating after the horizontal rolls, it follows that the pair of vertical rolls operating prior to the horizontal rolls will be driven at too high a speed—that is to say, faster than the metal can pass through the horizontal rolls; but since both pairs of vertical rolls are frictionally driven by the belt, the pulleys connected with the pair of vertical rolls operating prior to the horizontal rolls can slip on the belt when the rolls are retarded by the bar in the horizontal rolls. Since each pair of vertical rolls has independent connections to the belt, it is evident that the slipping or the driving pulleys of one set of vertical rolls will not affect the speed of the other set. Since both pairs of vertical rolls are normally driven at a higher speed than the horizontal rolls and since they will automatically adjust themselves to the speed of the bar being rolled, it is immaterial from which side of the mill the bar enters. As each vertical roll is independently adjustable it is evident that the rolls of that pair may be so adjusted that they do not come into play when that is desired. In mills having only one pair of vertical rolls only one set of pulleys and gearing of the frictionally driven mechanism is employed, the belt being arranged as desired, as indicated by the dotted line in Fig. 4.

San Francisco News.

Imports by rail for the year 1892 were as follows, in pounds:

Agricultural implements.....	15,568,370
Boilers, &c.....	1,329,220
Cutlery.....	108,660
Engines.....	1,283,940
Firearms.....	192,740
Hardware.....	9,054,840
Horseshoes.....	182,090
Iron.....	31,076,164
Iron pig.....	4,548,190
Iron rails and fish plates.....	11,604,990
Scales and beams.....	342,000
Shovels and spades.....	763,660
Steel.....	7,826,760
Stoves.....	7,041,870
Tin plate.....	375,040
Wire.....	9,956,660
Total.....	104,155,180

There has been a very great falling off here from the figures of 1891. In the matter of iron in its various descriptions there has been a falling off of about 33½ per cent. In pig iron, however, there has been a decided increase over 1891. The quantity of pig and scrap received by rail in 1891 was 73 tons; in 1892 the total was 2030 tons. This was outside of the figures by sea, given in a previous letter. There was a decided increase in the quantity of agricultural implements imported, one of about 50 per cent. This shows a great development in this interest, and coincides with what I have previously advised you. This did not, however, interfere with the home manufacture in the slightest degree. It keeps on steadily increasing in importance year by year. There has been a falling off of more than one-half in the imports of ingot copper by rail. There was an increase in receipts of cutlery of about 25 per cent. There have been of engines about 50 per cent. more imported than during 1891. This tells against our enterprise, or the circumstances that environ our manufacturers. There was a falling off of about 80 per cent. in the importations of nails by rail. Rails and fish plates scored a decided increase. The falling off in the imports of steel was about 35 per cent. This is in many ways an instructive exhibit. The decline in railroad

shipments, although due in a measure to decreased business in the State in 1892, as compared with 1891, is caused more by a diversion of freight from rail to sea. Especially is this true of the latter months of 1892. Imports by sea during those months, and since the beginning of the year, have been the largest in a long time. The present year will show changes even more striking. The low rates of freight that have been inaugurated by the North American Steamship Company via Panama will cause the shipment of vast quantities of hardware and metals by the new vessels. The old days of high freights and discrimination have passed by forever. It is now said that the railroads cannot make any further reductions, and it is very evident that the steamships must, with the clippers, have the greatest part of the business—the railroads the least. This, of course, throws the bulk of the business in hardware and metals into the hands of San Francisco merchants. There is going to be a revival in all lines owing to this, especially in those connected with hardware and metal. The new departure will bring this about to a certainty, and if there were no other influences conducive to the improvement of trade, the splendid rains that we have had, and the magnificent crops that are sure to follow, would be sufficient. The prices of cereals, especially wheat, are about as low as they can be, so that any improvement will make farmers sell. Then, our stocks of canned and dried fruit are exhausted, and a good demand is already reported by those who are in the trade. This bespeaks good prices for our fruits and a good year for our farmers and merchants.

There have been no particular changes in prices during the past two weeks save that the base price of nails has been fixed at \$2.10 for iron and steel for less than 200 kegs, and \$2 for more than 200 kegs.

The Sheet Manufacturers.

The regular monthly meeting of the Iron and Steel Sheet Manufacturers' Association was held at their headquarters, Times Building, Pittsburgh, on Tuesday, the 14th inst. J. G. Battelle of the Piqua Rolling Mill Company, Piqua, Ohio, presided, and John Jarrett was secretary. The attendance was fairly large, about fifteen firms being represented in person and a number by letter. No action of special importance was taken, with the exception that the wage scale for the year commencing on July 1 was taken up and discussed to some extent. It was the unanimous opinion of the members that any attempts made to lower the tariff duties must necessarily involve a corresponding reduction in wages. Bearing on this subject the following resolution was unanimously adopted: "Resolved, That a reduction in tariff affecting the market price of our products will necessitate a readjustment of wages to correspond with such reduction." Other business of a routine character was transacted, after which the meeting adjourned to reconvene in Pittsburgh on April 11 next.

At the conclusion of the above meeting an informal talk was had by four or five tin-plate manufacturers concerning the advisability of having a display of tin andterne plate at the World's Fair. The question of having an exhibit showing the process of mining the ore, smelting it and of cutting the sheets, and all details connected with the manufacture of tin andterne plates, was discussed, but no definite action was taken. It was hoped the attendance of tin plate manufacturers would have been larger, but as only four or five concerns were represented, definite action on this subject was postponed until a later date.

THE WEEK.

The cultivation of sisal fiber in the Bahama Islands is so successful that 70,000 acres of crown lands have been purchased and will be utilized in connection with the new industry.

The defective statistics relative to the exports of merchandise from the United States to Mexico and Canada, so long a subject of complaint, will soon be rectified. A circular from the Treasury Department instructs customs officers to supply statistics of exports by railroad from all interior points.

A commissioner sent to the Hawaiian Islands will return a full report bearing upon the question of annexation to the United States.

The mint vaults in Philadelphia contain silver equivalent to \$200,000,000, of which \$50,000,000 is coined, but the demand for gold is no less peremptory.

There is a strong probability that the Argentine railways enjoying the national guarantee will eventually revert to the Government on account of their increasing indebtedness. The Minister of the Interior states that the total advances to the end of their concession will approach \$100,000,000. Therefore, to enforce its claim, the only method would seem to be to take possession of the property.

A great fall in Irish securities is noted by English papers, and the reason given is the proposed establishment in Ireland of a legislature which will be in chronic want of money and is debarred from imposing new taxes except upon property.

Since its purchase of the Northern Railroad the New York Central controls every line of railroad entering Manhattan Island except the New York, New Haven & Hartford, and with that it is very closely allied.

Egyptian cotton seed will be planted experimentally by the Agricultural Department in the Southern States.

A Washington dispatch says the President wishes it to be known that in the appointment of consuls, particularly those to places in South America and Central America, he will be guided largely by the adaptability of candidates for business. These consuls are to be persons of experience in all trade matters, so that they can readily recognize whether a port is capable of becoming a good market for American goods.

New Orleans is promised an abundant supply of coal from the mines in Georgia and Alabama, the Richmond & Danville Railroad having arranged, through its Georgia Pacific branch, for a line of barges to run between its termini on the Mississippi and New Orleans for transporting coal.

The books of the Minnesota coal combine were seized at the agency of the company in St. Paul 15th inst., under authority of a legislative investigating committee, who profess to be able to make startling disclosures.

The companies in the northern part of New York engaged in producing mineral pulp are to be consolidated in one corporation having a capital of \$2,000,000.

The Dominion Parliament has decided to adopt nickel coinage for small currency in lieu of copper.

A number of small storage battery electric steamers are to be built at Tacoma to ply between that point and all Puget Sound routes, as the entire shore line is settling up rapidly, and the new boats will in effect be extensions of the city car lines. These boats are 56 feet long and calculated to make 15 miles an hour.

The earnings of the convicts in the New Jersey State prison under the piece-price system fall short of those under the old contract system, when the convicts were paid 50 cents a day.

Hebrew bankers throughout Europe retaliate Russian severities toward the Semitic race by boycotting the proposed Russian loans.

The largest transfer of lake vessel property in recent years has just been completed at Chicago, whereby the owner disposes of the great steamers "City of Naples," "City of Genoa" and "City of Berlin" for \$405,000.

Under the law of 1891, authorizing the President to set apart as a reservation any public land covered with trees, about 12,000,000 acres have been recovered from the woodman's axe. The principal tracts are in Utah, New Mexico, Colorado, Minnesota, California, Oregon and Washington.

A report from San Francisco says that Claus Spreckles, the sugar operator, proposes to transfer four steamers owned by him and employed on the Australian route and start an opposition line from San Francisco to Panama.

The only contracts for power at the great cataract which have been let up to date are with the Niagara Paper Company, who have contracted for 3000 horse power at the rate of \$24,000 a year, and the Contract Electric Company of Buffalo, who have contracted for 10,000 horse-power, to be delivered at the northern boundary of the city. There have been many other applicants for power, but purchasers seem to be holding back until the first trial is made, in order to see if it is entirely successful.

The Chinese Government has decided to lay a telegraph line from Peking to Pamer, in the direction of India. Could the Indian lines be connected, the advantages to commerce would be incalculable.

Fourteen Austrian iron workers, bound to Joliet, Ill., were returned to Europe from this port last week, under the Contract Labor law.

The seven trunk-line railroads from the West which terminate at this port have contracted for over 1,000,000 bushels of grain, to be transferred by rail from Buffalo to New York on the opening of navigation, at 6 cents for wheat, 5½ cents for corn and 4 cents for oats. An effort by these railroads to avoid the severe cutting practiced last year appears to be in favor of the canals.

The Nicaragua Canal Construction Company have purchased the ocean steamer "President Carazo," to be added to their fleet, making nine vessels owned by the company. The new steamer is American built, and it is the intention of the company to use the boat for shipping supplies and employee to the canal works from American ports.

The net profits of the Cunard Steamship Company last year were only about \$150,000, on account of low freights and loss of steerage traffic.

A mechanic arts building will be erected in New York at a cost of \$200,000, through the munificence of a lady who presents that amount to the Teachers' College.

While the consumption in the United States of such articles as sugar, beer and tobacco has increased with enormous rapidity of late years, there appears to be comparatively little gain in the demand for wheat, tea and coffee.

New Orleans papers claim that of late the grain exports from that city exceed the combined grain exports of all other ports.

The Pacific Northwest, lying north of California, promises commercial importance as a fruit-growing country. Prune culture is especially remunerative. East of the Cascades and west of the Rockies lies an immense region, known as the Inland Empire, mostly rolling upland, but portions produce choice fruit, as at the Dalles, close to the Cascades, at Walla Walla and in the Palouse. A very interesting fact in connection with that region is that the river cañons of the Columbia and Snake rivers and their tributaries, all of which have cut down through alluvial uplands, sometimes thousands of feet, produce fruits not grown in the coast valleys and not possible on the adjoining uplands. There is very little of these river lands, but where some stream or cañon debouches there may be a sandy loam spot where fruits can grow, or on the lower benches of the hills. The Columbia comes south from British Columbia for 300 miles, to its junction with Snake River, which rises in the mountains of Utah and Idaho; through all their course, draining 10° of latitude, these cañons and river shores produce all the fruits of the region and many grown in California.

The Russian Government is buying Canadian barley for seeding purposes.

The crop of Florida oranges last year was a large one, reaching some 3,800,000 boxes, while that of California was over 1,000,000 boxes. The Florida crop of the present season, now nearly all marketed, will not reach 3,000,000 boxes, but that of California will come up well toward 2,000,000 boxes; thus making the American crop, including that of Louisiana, nearly equal to that of last year. At this rate the United States will soon be compelled to dispose of a surplus by seeking a foreign market.

The great double-track tunnel in process of excavation through the Palisades near Weehawken in New Jersey is making rapid progress and will be completed before the end of December. It will be one mile in length, and extends from the meadows to the tracks of the New York, Susquehanna & Western Railroad at Little Ferry Station, in whose interests the work is supposed to be. At the eastern mouth of the tunnel, piers, coal sheds and freight warehouses will be erected the coming summer.

Traffic through the Suez Canal has fallen off since the beginning of the year to a very perceptible extent.

Association of American Manufacturers.—An important result of the merchants' trip to Mexico, mentioned in former issues, has been the formation of an association, to be called "The Association of American Manufacturers," having for its objects the promotion of foreign trade and the business interests of its members. The officers of the association are: G. M. Brill, Philadelphia, Pa., president; F. C. Myers, Ashland, Ohio, vice-president; Lucius C. Bigelow, Harrisburg, Pa., secretary; G. Horace McFarlane, Harrisburg, Pa., treasurer. There is an executive board, composed of nine prominent manufacturers from different cities, to act as a committee on trade relations, with sub-committees to consider questions of tariff and freight rates. The membership fee is \$5 and the annual subscription \$5. The annual meeting is appointed for the third Wednesday in October in each year, at such time and place as may be agreed upon. The meeting in October next will be held in New York. It is expected that the association will be the means of opening to its members a new channel of trade by furnishing valuable information and presenting ample opportunities for its development.

The Cambria Iron Company have declared a dividend of 5 per cent.

The Iron Age

New York, Thursday, March 23, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Future for Forge Iron.

With the rapid change from puddled iron to soft steel in our rolling mills interesting and perplexing questions arise concerning the future of forge iron. No one pretends to claim that puddling, for certain purposes, will not continue to hold its own, but relatively the consumption of mill pig iron will be very small. To those furnace plants which have been running specially on this grade, using non-Bessemer lake ores, there will be little hardship in such a development, since they simply go on to Bessemer iron. In some sections where Bessemer ore is not as cheaply available the furnacemen will probably turn to making foundry irons. It is upon the Southern districts, and notably upon Birmingham, that the shifting current would have its most serious effect. With few exceptions the furnaces of that district make a very heavy proportion of forge and lower grades, by far the greater part of which has been sold to consumers north of the Potomac and the Ohio rivers. A diminishing demand from the puddling mills would throw the whole weight of the great product upon the cast-iron pipe makers as the principal buyers. The capacity of the latter to develop as increasingly large buyers has been subject to some doubt lately, since recent lettings of large water works contracts have shown the danger of inroads by the makers of riveted steel plate pipe.

That the leading Southern iron producers are thoroughly aroused on the questions at issue is thoroughly proven by the earnest interest they are taking in the establishment of steel manufacture from local raw material. Their future is tied up in it. They cannot hope to compete when they base the industry upon imported ores, which at best may serve to enrich their mixtures. There has been some talk lately of a steel plant based on Cuban ore, the parties interested being identified with a leading Birmingham plant, and at the same time with a Cuban ore enterprise. We doubt, however, whether there is much prospect of success in such a venture.

The Southern producers must look to their cheap pig iron as the foundation of the industry. It has been urged that their first efforts should be directed to an improvement in their furnace practice, so that they make better foundry iron and more of it. That, of course, is very important and should not be neglected; but, after all, it does not go to the root of the matter. They must become steel makers, and from present indications it looks as though they will succeed. Until the Talbot process appeared, with its promise to overcome certain patent obstacles, we

were skeptical as to the outcome, not on technical grounds, but purely from a commercial point of view. The cheap and efficient desilicizing process alluded to practically removes the most serious obstacle and promises to make Southern steel an economic possibility.

A desilicized basic pig iron at \$8.50, delivered to the open-hearth furnace, is likely to possess a capacity for lively competition against \$13 Bessemer pig at Pittsburgh, or \$15 metal of the same grade in Eastern Pennsylvania. It will not do to pooh-pooh it, particularly since a large share of the product must reach Northern markets at first, as did the Chattanooga basic steel.

Immigration Resumed.

The enforced suspension of immigration from Europe, which followed Treasury orders imposing a rigorous inspection at quarantine, is no longer operative. For awhile, and perhaps until the spring has well advanced, there is not likely to be any necessity for excluding immigrants of the better class, as a measure to bar out infectious disease. Cholera is known to be prevalent in parts of Russia and there are indications of its presence at points in other parts of Europe contiguous to regions whence much of our immigration is derived. Therefore all quarantine officials, whether at home or on foreign stations, will be on the alert to observe the first threatening symptoms and take measures to arrest the danger. These facts being understood, it is not surprising that the usual spring immigration from the Old World has already commenced in full volume. The immigrant landing at Ellis Island, deserted all winter, is again thronged with new arrivals and the customary troops of persons of foreign mein, encumbered with worldly possessions, are seen *in transitu* for their destination, usually in the far West. Indeed, it is evident that the temporary check to this movement only served to dam the current, which, being released, now moves forward with renewed impetus. We may reasonably anticipate, therefore, the addition of something like another half a million of people from over the seas before the expiration of the year. The peculiar political, social and industrial conditions of Europe at the present time, contrasted with the comparative affluence of the United States, the prosperity of trade, abundance of food and exemption from war alarms, all contribute to excite a feeling of unrest that can be satisfied only when a ticket is bought guaranteeing transportation to that far-famed elysium beyond the setting sun.

The question to be immediately considered by the national and State quarantine authorities with reference to this subject is the necessity of adopting such measures as shall secure uniform regulations along the entire coast, and harmony of action in enforcing these regulations during the coming summer. To this end an important conference was held at Washington during the past week, in which the health officers and port physicians of all the seaboard States participated. The conference was called by the Secretary of the Treasury at the solicitation

of Supervising Surgeon-General Wyman of the Marine Hospital Service, who had framed a system of rules applicable to all the ports, to serve as a basis for deliberation. The regulations define the equipment of stations, state what vessels should be inspected, how they shall be treated if diseases are found aboard, the mode of treatment of specific diseases, the proper mode of disinfection, &c. Special rules are made with reference to quarantine for cholera and yellow fever.

In the form finally agreed upon, these regulations will be sanctioned and promulgated by the Treasury Department. At the same time, American consuls abroad will exercise due vigilance and care that every needed precaution is taken by port officials and steamship companies to prevent the spread of infectious disease. Every vessel must be fumigated, every emigrant examined, and no bill of health given until all requirements are literally complied with. Hamburg suffered severely last season from neglect of sanitary precautions, likewise the steamship companies, which were driven from the trade as a consequence, so that the strongest motives of self-interest prompt to fidelity in the performance of duty on the part of all concerned. Thus with a double line of defense, as above defined—port officers and consuls co-operating with steamship companies—we may entertain a reasonable hope that the danger that threatened last summer will be warded off no less successfully should pestilence again menace our shores. As amended by the Secretary of the Treasury, steam vessels from a suspected or infected port may be allowed to enter after fumigation at quarantine and five days' subsequent detention.

Prospective Railroad Construction.

The *Railway Age* contributes a great deal of interesting information to the discussion of the subject of probable railroad construction this year. A table has been compiled of all the roads under construction, under contract, surveyed or under survey, and in some cases only incorporated or projected, but which seem likely to be built, rejecting old enterprises which have not been carried through and mere incorporations with no definite standing. A summary of these lines, credited to the States in which they start, is as follows:

Lines Under Construction, Surveyed or Projected.

State.	Lines.	Miles.	State.	Lines.	Miles.
Alabama.....	16	1,138	Montana.....	4	308
Arizona.....	2	205	Nebraska....	6	438
Arkansas.....	15	602	N. Hampshire	3	12
California.....	11	937	New Jersey..	3	100
Colorado.....	10	707	New Mexico..	5	1,008
Connecticut..	3	32	New York....	18	379
Delaware.....	1	5	Nevada.....	1	4
Florida.....	13	1,206	N. Carolina..	19	773
Georgia.....	18	1,223	N. Dakota....	1	284
Idaho.....	2	110	Ohio.....	19	1,551
Illinois.....	11	825	Oregon.....	7	703
Indiana.....	10	563	Pennsylvania	32	789
Iowa.....	1	383	Rhode Island	2	19
Kansas.....	8	930	S. Carolina..	6	607
Kentucky....	13	453	S. Dakota....	6	783
Louisiana....	7	483	Tennessee..	17	1,284
Maine.....	6	403	Texas.....	25	2,150
Maryland....	6	243	Utah.....	5	528
Massachusetts	3	44	Vermont.....	1	68
Michigan.....	8	368	Virginia....	10	204
Minnesota..	12	1,265	Washington.	12	656
Mississippi..	5	232	W. Virginia.	16	521
Missouri.....	11	756	Wisconsin....	12	906
			Wyoming....	2	750
Total.....				425	27,765

This compilation seems to be remarkably conservative, in the light of the facts given in the case of each line, which it would take too much space to present in full in our columns. There are no wild schemes included, no great projects for paralleling prominent trunk lines or spanning the continent. The lines covered are in the main very short. The average for the whole 425 roads is only 65 miles. This accords with the observation so frequently made of late in connection with new railroad mileage—namely, that new construction now runs to limited extension of old roads, short branch lines, feeders, &c. Every one of the 48 States and Territories appears in the list, and in some of them a very considerable number of new lines is proposed. It is not assumed that all of these enterprises will be carried through in the near future. It is a long step from projecting a railroad to placing it in the hands of a construction company. Some idea, however, of the actual work to be done this year can be obtained from the following table of lines on which work was in progress at the close of last year or on which work is now in progress:

Unfinished Lines on which Work was Done in 1892 or is now in Progress.

State.	Lines.	Miles.	State.	Lines.	Miles.
Alabama.....	6	99	Nebraska.....	3	122
Arizona.....	1	40	New Mexico.....	2	41
Arkansas.....	6	208	New York.....	7	41
California.....	6	228	N. Dakota.....	2	284
Colorado.....	5	117	Ohio.....	2	208
Florida.....	5	272	Oregon.....	2	190
Georgia.....	7	269	Pennsylvania.....	20	274
Illinois.....	4	133	Rhode Island.....	1	7
Indiana.....	4	88	S. Dakota.....	3	378
Kansas.....	2	25	Tennessee.....	4	129
Kentucky.....	6	70	Texas.....	9	369
Louisiana.....	3	41	Utah.....	1	48
Maine.....	3	197	Virginia.....	6	90
Maryland.....	2	75	Washington.....	5	90
Michigan.....	2	16	W. Virginia.....	13	227
Minnesota.....	5	92	Wisconsin.....	4	48
Mississippi.....	2	31			
Missouri.....	5	127	Total.....	164	4804
Montana.....	1	20			

Not all of this mileage is expected to be completed in 1893. On the other hand, however, additional enterprises are likely to be undertaken unless some serious financial revulsion occurs. It therefore seems not unreasonable to presume that something over 4000 miles will be built this year, or about as much as that of 1892.

In view of the records of railroad building in this country in past years, the prospects for 1893, as thus shown, are not of a character to make glad the hearts of those who manufacture railroad equipment. The yearly average of railroad building in the ten years extending from 1882 to 1892 was over 6000 miles. In 1887 alone 12,878 miles were built. Manufacturing facilities now in existence could easily duplicate this work, and at the same time handle the demand from established roads for supplies. Manufacturers have, however, accommodated themselves as gracefully as possible to the restricted demand and will perhaps feel thankful if this year is no worse than last. Meantime they have some reason to hope, from the above statement of lines projected, that the consumption of railroad material will show a substantial increase.

We have commented to some extent at various times on the rapid development of manufacturing towns in the vicinity

of Chicago, either within the corporate limits of the city or a very short distance outside. This movement has by no means culminated, but still continues, being remarkably persistent. It has covered more than an ordinary business cycle since it became sufficiently pronounced to attract much attention. Booms in other localities have run their course and faded, but new Chicago projects continue to come forward. Several ambitious schemes, with industrial enterprises of promising scope as a nucleus, have quite recently been organized and will shortly be launched on the sea of popular favor. It seems only reasonable to suppose that a limit of development of this character must be reached, but thus far all predictions of a disastrous collapse have failed.

England's Decline.

The official statistics of the production of pig iron and Bessemer steel, just published by the British Iron Trade Association, again furnish a startling proof of the rapid decline of Great Britain's crude iron and steel industry. During 1892 the production of pig iron fell off over 600,000 tons, and was less than in any one year during the last decade. Placed side by side the production of Great Britain and of the United States during the past ten years was as follows:

Pig-Iron Production—Gross Tons.

Year.	United Kingdom.	United States.
1882.....	8,586,680	4,623,323
1883.....	8,529,300	4,595,510
1884.....	7,811,727	4,097,868
1885.....	7,415,469	4,044,526
1886.....	7,009,754	5,683,329
1887.....	7,559,518	6,417,148
1888.....	7,998,969	6,489,738
1889.....	8,322,824	7,603,642
1890.....	7,904,214	9,202,703
1891.....	7,228,496	8,279,870
1892.....	6,616,890	9,157,000

The startling result of the development of pig-iron manufacture in the two countries is that while in 1882 Great Britain produced 3,963,357 tons more than this country, that being its best year, we ten years later made 2,540,110 tons more, and in two years, in 1890 and in 1892, had far eclipsed its best record.

It is true that Great Britain has drawn heavily upon her stocks of pig iron during the past five years. The following are the figures:

English Stocks.

End of	Gross tons.
1888.....	2,588,708
1889.....	1,951,443
1890.....	1,393,041
1891.....	1,232,277
1892.....	872,095

Quite a good many people in this country attach much importance to this record of declining stocks. We cannot agree with them, because the reserve producing capacity is too enormous. If production has dropped over 600,000 tons in one year, it can readily, under favorable circumstances, rush upward at even a greater rate. With modern facilities for quick repairs, equipment for mining and transportation, stocks have lost a good deal of their significance.

We have for so many years outstripped Great Britain as a producer of Bessemer steel that interest has long since ceased.

Still, while we have been progressing, our former rival has dropped further behind. The following figures cover a period from 1878:

Production of Bessemer Steel—Gross Tons.

Year.	United Kingdom.	United States.
1878.....	807,527	644,844
1879.....	834,511	829,394
1880.....	1,044,382	1,074,261
1881.....	1,441,719	1,374,247
1882.....	1,673,649	1,514,688
1883.....	1,553,380	1,477,345
1884.....	1,299,676	1,375,581
1885.....	1,304,127	1,519,433
1886.....	1,570,520	2,269,190
1887.....	2,089,403	2,956,033
1888.....	2,032,794	2,511,160
1889.....	2,140,791	2,930,204
1890.....	2,014,843	3,688,871
1891.....	1,642,005	3,247,417
1892.....	1,500,810	4,160,972

While, therefore, the United States has held the supremacy for a good many years, so far as Bessemer steel is concerned, it is still behind in open-hearth steel. The data for 1892 are not yet at hand for either country, but we feel convinced that we are gaining. In 1890 the British output was 1,564,300 tons, while in 1891 our production was 579,753 tons. It will probably take some years before our make reaches this magnitude.

PERSONAL.

Thomas Carr, formerly superintendent of brick and masonry work at the Edgar Thomson Steel Works, has resigned his position to accept a similar one with the Ohio Steel Company of Youngstown, Ohio.

Reuben Patterson is the successor of Henry King, as manager of the Roanoke Iron Company, Roanoke, Va.

Joseph Parkes, recently at Trinidad, Col., has become superintendent of the Durango Steel & Iron Company, Durango, Mexico. After reconstruction the plant will have a 10-inch and an 18 inch train, gas furnaces and puddling furnaces.

John Birkinbine of Philadelphia is in Mexico examining iron properties as an expert for English capitalists.

Edward Ball of Florence, Wis., has been appointed superintendent of the Platt Mine, on the Marquette Range, Michigan, replacing Chas. L. Lawton, who has accepted a similar position at the Bessemer Mine, in North Carolina.

G. De la Boulglise, the most prominent French mining engineer, largely interested in copper, is on his way to the Cripple Creek district, Colorado, and to the Butte district, Montana.

Nickel Steel for Boilers.—It has been reported that the Detroit Dry Dock Company of Detroit, Mich., intended to use nickel steel for boilers. The *Railroad Gazette* states that the company have been endeavoring to get information touching on the question of nickel steel and its uses, particularly for boiler purposes. They have canvassed the necessary ground to reach a decision in regard to its use in marine boilers, but thus far have found it very difficult to secure any reliable statistics. They have secured some prices, which have not encouraged them to consider the matter further, as the steel at present is too expensive for such use. The reason for considering the matter was a desire to decrease the weight of boilers, or with the same weight of steel as is now used, to be able to carry higher boiler pressures.

CORRESPONDENCE.

Bessemer Steel at the Head of the Lakes.

To the Editor: The discovery of so many large deposits of soft high-grade Bessemer ores on the Mesabi iron range, and the corresponding amount of conjecture as to the probable cost of producing iron and steel at the head of the lakes, led the writer to make the following estimates of the cost of a ton of finished product by a works located either in Superior or Duluth, owning and operating its own ore mines, and producing coke from Connellsville coal, with a well regulated and modern furnace and mill plant, turning out 1000 tons finished rails, angles, beams or billets, and employing from 1200 to 1500 men.

Ore.....	\$3.70
Scrap, &c.....	.10
Coke, coal and limestone.....	5.25

Total materials.....	\$9.05
Supplies and repairs.....	.65
Total labor.....	.75

Total cost of ton pig iron.....	\$10.45
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Cost pig iron in 1 ton ingots.....	\$10.45
Spiegel.....	2.203
Coke and limestone.....	.09
Coal.....	.67
Refractories.....	.12
Ingot molds and stools.....	.10
Repairs and supplies on machinery.....	.25
Labor.....	.507

Total.....	\$14.39
Scrap.....	.22

Total cost of 1 ton ingots.....	\$14.17
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Cost of ingots in 1 ton rails.....	\$15.1238
Fuel.....	1.33
Supplies and repairs.....	.75
Labor.....	.7255

Total.....	\$17.9293
Scrap.....	.5488

General labor.....	\$17.3805
	.9125

	\$18.293
Interest on plant at 6 per cent.....	.60

	\$18.893
Incidental taxes and insurance.....	.50

Total cost of 1 ton rails.....	\$19.393
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Cost of 1 ton of billets.....	\$17.393
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The figures on fuel we made on modern tube-boiler practice and compound engines.

PRACTICAL.

The Bethlehem Iron Company have sent a consignment of 37 tons of armor to the Brooklyn Navy Yard. The shipment consisted of curved turret plates for the "Terror." Several shafts for battle ships Nos. 1 and 2 were sent to the Cramps on Thursday.

The Supreme Court of Tennessee recently rendered a decision which is of very broad and general application in the principles it involves. It appears that the Wholesale Grocers' Association of Nashville had bound its members not to buy from any importer or manufacturer who sold to retail merchants. The plaintiff, a retail grocer, brought suit against the association for \$25,000, alleging that this combination of wholesale grocers had damaged his business, diminished his profits, and subjected him to great inconvenience and trouble, and that the compact made and enforced by the wholesale grocers was in restraint of trade, and therefore against public policy and unlawful. The trial judge charged the jury that such an organization was illegal, and that the plaintiff was entitled to recover any actual damage he had suffered by reason of such combination. In sustaining the decision on

these points the Supreme Court went further, and held that if such an agreement was found to exist and the plaintiff had suffered from it he was entitled to a verdict or nominal damages which would carry with it the costs of the action.

The James P. Witherow Company.

In the courts at Pittsburgh recently an order was made permitting Alexander Thomas, assignee, to convey the property of James P. Witherow, engineer and contractor, of Pittsburgh, to the James P. Witherow Company of that city. It will be remembered that about the close of the year 1891 Mr. Witherow became financially embarrassed, and after several unsuccessful attempts to arrange a satisfactory settlement with his creditors, his entire affairs were placed in the hands of Alexander Thomas, assignee. After more than a year, during which it seemed several times as if the valuable property of Mr. Witherow would be sold at forced sale, an arrangement was perfected by which the larger creditors take stock for the full amount of their claims, and in addition each contributed 25 per cent. of the amount of their claims for a working capital in order to put the new concern in good financial condition. The new concern will be managed by a board of directors elected by the stockholders, and consisting of the following persons: L. Raney of Raney & Berger Iron Company, New Castle, Pa., president; Geo. Best of Best, Fox & Co., Pittsburgh, secretary and treasurer; Henry M. Atwood of Atwood & McCaffrey; Henry W. Oliver of the Oliver Iron & Steel Company, Pittsburgh, and James P. Witherow. The plant of the James P. Witherow Company is a very complete one in all respects, and is located at New Castle, Pa. The shipping facilities are good, the works having direct connection with the Pennsylvania R. R., the Pittsburgh & Lake Erie R. R., the Pittsburgh & Western R. R., the Western New York & Pennsylvania R. R., the New York, Pennsylvania & Ohio R. R., and the Pittsburgh, Youngstown & Ashtabula R. R. The principal buildings consist of a new machine and erecting shop, which is 144 feet long by 82½ feet wide and 42½ feet high. This building is built of brick and wrought iron with slate roof. The old machine and erecting shop is 134½ feet long by 60 feet wide and 17 feet high. This shop is a continuation of the new machine shop, with the difference that the traveling crane extends along the new part of the shop only.

Both of these buildings are equipped with modern tools. The foundry adjoins the old machine shop and is 155 feet long by 77 feet wide and 26 feet high. All the castings required in the machine shop are made in this foundry, from the largest steam and blast cylinders to the smallest throttle valves. There are two boiler shops, one of which is 214 feet long by 50 feet wide by 23 feet high, and the other is 124½ feet long by 79 feet wide. These shops are fitted with every requirement for constructing and equipping all kinds of boilers of all dimensions, also tank work, bridge work and iron buildings of all kinds. Included in the equipment is a complete outfit of all kinds of machines and tools necessary for this branch of the business, including a set of plate bending rolls 16 feet 6 inches wide, among the largest in the country. It also contains hydraulic, pneumatic and steam riveting machines. In addition to the above buildings, there are numerous other smaller buildings, and all in all the above is one of the most complete machine and foundry establishments in the country. Under the able management of the above Board of Directors it would seem that the James P.

Witherow Company have a good future before them, and, with careful, economical management, it is believed that the creditors will be paid off in full within a reasonable time. The new concern have recently opened offices in rooms 615 and 616 Times Building, Pittsburgh, and a contract has been closed with the Watts Iron and Steel Syndicate of Middlesborough, Ky., for the building of the uncompleted portion of that plant. In addition to the above, the new concern expect to secure several other contracts in the near future which will insure steady operation of the plant for some time to come.

We are advised that negotiations are now pending which will result in the consolidation of the interests of the Ætna Iron & Steel Company and the Standard Iron Company, both of Bridgeport, Ohio, within a short time. These two concerns are among the largest in the Ohio Valley, and when the consolidation has been effected the new concern will have a capital stock of \$2,300,000, divided into 15,000 shares of preferred stock representing \$1,500,000, and 8000 shares of common stock representing \$800,000. In case the consolidation is consummated all of this stock, except \$300,000 of preferred shares, will be used in payment for assets of the two existing companies, the reserved \$300,000 of preferred stock being held at par for any improvements that may be necessary. The preferred stock is to be entitled to dividends of 8 per cent., and the common stock is to be entitled to dividends from the surplus profits after the claims of the preferred stock are satisfied in an amount not to exceed 2½ per cent. of the capital stock for each year. The contingent fund is to be from \$100,000 to \$200,000. The plant of the Ætna Iron & Steel Company was built in Bridgeport in 1873 and put in operation on January 1, 1874, additions having been made to the plant in 1873 and 1891. The equipment consists of 31 single puddling furnaces, two scrap furnaces, six regenerative gas and six reverberatory heating furnaces, seven sheet-mill softening furnaces, six box-annealing furnaces and 11 trains of rolls (one 20 inch muck and one 8 or 9 inch guide, one 16 and one 24 inch bar, all three-high; three 20 and two 22-inch sheet and one 24-inch large jobbing sheet). The product consisting of iron and steel bars, sheets, plates, light T and street rails, and other miscellaneous shapes, the annual capacity being about 50,000 net tons. The officers of the concern are: W. H. Tallman, president; John A. Topping, secretary and treasurer; B. M. Caldwell, manager. The plant of the Standard Iron Company was established in Bridgeport in 1882 and 1883, and operations were commenced on April 1, 1883. In 1888 it was extensively remodeled and additions made, the equipment consisting of eight single puddling furnaces, two bar and four pair heating furnaces, five softening furnaces, four double annealing furnaces, one plate-mill heating furnace and seven trains of rolls (two 18-inch, three 20-inch sheet, one 22-inch sheet and one three-high 24-inch plate), the product being plate iron and steel sheets, and also steel sheets for roofing purposes. Last year four 22-inch sheet mills and four pair, four softening and three double annealing furnaces were erected, which increased the capacity of the plant to 25,000 net tons per annum. The officials of the Standard Iron Company are: L. S. Delaplain, president, and W. T. Graham, secretary. If the consolidation is effected, and all indications are that it will be, the new concern will be known as the Ætna-Standard Iron & Steel Company.

R. P. Linderman, president of the Bethlehem Iron Company, has gone to Cuba.

The Western Pipe Consolidation.

The consolidation of the Western and Southern cast-iron pipe foundries, to which *The Iron Age* made repeated reference earlier in the year, is getting into shape. The companies represented at a meeting at Buffalo last week were Addyston Pipe & Steel Company, Addyston, Ohio; South Pittsburgh, Tenn., Pipe Works; Shickle, Harrison & Howard Company, St. Louis; Howard-Harrison Iron Company, Bessemer, Ala.; Lake Shore Foundry Company, Cleveland, Ohio; Radford Pipe & Foundry Company, two plants, one at Radford, Va., and the other at Anniston, Ala.; Dennis Long Company, Louisville; Chattanooga Foundry & Pipe Company, Chattanooga & Ohio Pipe Company, Columbus, Ohio.

There are not included, therefore, a number of small concerns, like the Hercules Foundry Company, Pell City, Ala.; New Birmingham Pipe Works, New Birmingham, Ala.; Rusk Pipe Works, Rusk, Texas; Cleveland Pipe Works Company, New Philadelphia, Pa.; Massac Iron Company, Metropolis, Ill.; Detroit Pipe & Foundry Company, Detroit; West Superior Iron & Steel Company, West Superior, Wis., and the South St. Louis Foundry at St. Louis.

It is proposed to call the consolidated company the American Pipe & Foundry Company, with headquarters at Chicago. Gen. Samuel Thomas of the Union Trust Building, New York, is expected to place a part of the new capital with Eastern investors.

One of the causes that has led to long delay has been the contest for the presidency of the new company. As a compromise between the different parties, O. C. Barber of Chicago will probably be chosen.

The Amalgamated Association is on the eve of considering a question of vast importance to the iron workers generally. The secession of the finishers has had some effect on the order, and caused the officials to think seriously of the manner which has heretofore been in vogue of determining the scale question. In the past, the different classes of artisans—that is, the boilers, heaters, rollers, steel workers and sheet workers—have gone into the same convention, and each class has taken an equally active part in settling the scale of the boilers and finishers. The Eastern men usually prepare their scale beforehand, the steel workers do the same, and they are brought into the convention and only ratified. Then when it comes to determining on the rate for the Western men, the Eastern men take part with voice and vote. The boilers, as well as the iron workers generally, have objected to this, claiming that they permit the steel workers and Eastern iron workers to prepare their own prices, and those from the West should be granted the same privilege. The Amalgamated Association is now on the eve of discussing this question, with the object in view of permitting the different class of workers to prepare their own scale and submit it to the association convention for ratification only. The plan has a great many earnest supporters.

At a meeting of the Ohio and Pittsburgh Railroads, held in Pittsburgh last week, the coal rate to Lake points was increased 5 cents per ton. The Ohio roads wanted a differential of 5 cents against Pittsburgh, but were unable to secure it, and a uniform rate of 90 cents was agreed upon. This is the rate that was in force two years ago in the Pittsburgh district, and which the Pittsburgh roads were successful in reducing last year by 5 cents, thus equalizing the Ohio and Pittsburgh rates to 85 cents.

NEW PUBLICATIONS.

STUDENTS' EXPENSES.—A Collection of Letters; with Introduction by Frank Bolles, Secretary of Harvard University. Cambridge, Mass., 1893.

Careful perusal of this little 45-page pamphlet should be quite sufficient to remove from the public mind the mistaken idea prevailing that Harvard University is a college for the sons of rich men only. Here are printed at length letters from 40 students, selected by Mr. Bolles as good examples of very poor, earnest, scholarly men who, starting with few or no advantages, have managed to carry themselves creditably and with moderate comfort through the college course by a system of ordinary economy and self help. These men include students from every part of the Union as well as from Canada, Europe and Japan; the greater number of whom have graduated with high honors. These letters show that it is possible to live at Harvard on little over \$300 a year, receiving the full benefits of the college course of studies, and joining to a moderate degree in the social, athletic and literary advantages open to a young man at the University. The accounts furnished by the correspondents show a range of annual expenses varying from \$300 to \$700 a year, but the larger proportion tend to the lower figure. Exceptional advantages are now offered to needy students by the recent formation of dining associations and food clubs, a loan furniture association, and other helps which enable him to get through his academic career honorably and happily at the minimum of expense. Besides the reduction in living expenses, poor scholars are further helped by being given teaching, literary, or other employment from which they can earn enough in many cases to defray the major part of their necessary outlay on instruction. For this purpose a regular college employment bureau has been opened, which has been able to put many opportunities for earning money into the way of those students needing pecuniary help.

THE CONNECTICUT STEAM USERS' DIRECTORY, 1893. L. F. Middlebrook, Hartford, Conn.

A little work has been compiled with the object of supplying the steam-using public of Connecticut with a convenient book of mutual reference, and the general public with a medium of information to assist in soliciting business, sending circulars, &c. The book supplies the names, location and business of all users of steam in the State, alphabetically arranged under the various cities and towns, as well as a purchaser's guide, containing a list of manufacturers and dealers in other States who supply the necessities of mill owners. The directory should be a useful handbook for those doing business in or with the State of Connecticut.

The Triumph Chain.—The paper by Professor N. S. Hele-Shaw on the strength of small chains, an abstract of which was printed in *The Iron Age*, on page 604, March 16, 1893, did not refer to the makers of the American "Triumph" chain, to the extraordinary strength of which he calls attention. We may state, therefore, that the Triumph chain is manufactured by the Bridgeport Chain Company of Bridgeport, Conn., of which George C. Edwards is president and treasurer, and Charles L. Slide, secretary.

The Western Pennsylvania Brick Exchange held a meeting at Pittsburgh last week at which it was decided to reduce the prices of bricks for the coming year 50 cents per thousand. The membership of the above exchange includes nearly all

the brick makers of Pittsburgh and Allegheny. The following was the scale per thousand bricks agreed upon. Hard brick, \$7.50; soft or salmon brick, \$7.; paving brick, \$10.; common front, \$12.; select stock, \$14.

The Diamond Machine Company, makers of grinding and polishing machinery, of Providence, R. I., have adopted for use in their exhibit at the World's Columbian Fair an illuminated sign, which will be of fine stained glass and wholly new in method of construction, for, in place of the unstable mounting of lead with the unsightly iron crossbars heretofore used, the glass is set in a durable cement between copper; the latter is "whole," as the spaces filled by the glass are cut out. Desirable and artistic effects are thus gained by the very varying lines or "masses" of copper never before attained under the old method. This new patented way of setting stained glass is owned by the Metallic Setting Company of Providence.

The Boleo copper mines of Lower California produced last year 6300 tons. It is expected that they will make 8000 tons this year and reach 10,000 tons in 1894, which is to be the high-water mark. We understand that the copper can be laid down, sold, in London at £35.

A memorial to Congress has been prepared on the subject of a Road Department at Washington for the purpose of promoting knowledge in the art of constructing and maintaining roads. It is also recommended that there be established a permanent exhibit illustrating various methods of construction, road materials and machinery, and that Congress appropriate funds sufficient to erect a building at the World's Columbian Exposition for the purpose of a comprehensive road exhibit. The petition has been signed by a large number of prominent men, including the Governors of 19 States and other officials high in public life. The petition quotes from letters on the subject received from prominent individuals, corporations and societies, and gives extracts from newspapers relating to it, the whole occupying a pamphlet of 96 pages.

The Spathite Iron Company, which recently purchased the furnace of the North Alabama Furnace Foundry & Land Company, at Florence, Alabama, have put the furnace in first-class condition and will commence the manufacture of iron in the next few days. It will be sold under the name of Spathite, and for the present prices will be made on basis of Birmingham No. 1 foundry pig.

The largest shaft ever forged in America was sent from the Bethlehem Iron Works to the Chicago Fair on Saturday. It weighs 89,320 pounds, and will be the axle of the perpendicular hurdy-gurdy, 264 feet high, invented by a Pittsburgh engineer.

Andrew H. Lucas and others of St. Louis have contracted for the construction of a steel steamer of 1000 tons, to be built in Dubuque, Iowa, capable of navigating either deep or shallow water, by the application of the centerboard principle; or, in other words, an adjustable keel, the design being to open a direct route between the West and Central and South American seaports. In this way, some portion of the trade with Venezuela and other countries, which now goes to New York, may be diverted. The Mississippi River & Ocean Navigation Company propose to build several steamers of the character described.

MANUFACTURING.

Iron and Steel.

The Gautier Steel Department of the Cambria Iron Company of Johnstown, Pa., have commenced the construction of a building by the side of their present 10-inch mill, which will measure 75 x 430 feet, in which a 14-inch mill will be erected for rolling merchant steel. The new train will be ready for operation some time during the latter part of this year.

The gearing on the small mill of the Arethusa Iron Works of Geo. W. Johnson, New Castle, Pa., having become very much worn, and not adapted to the purpose for which it was intended, has been thrown out, and an engine is now being put in to run the mill direct. Heavy housing is also being added to the mill. The above plant is in full operation, turning out a large product of plate and sheet iron.

Notices of reductions have been served upon the employees of the Elba Iron Works Department of the Oil Well Supply Company, at Pittsburgh. Puddlers are to be reduced from \$5.50 to \$5 per ton.

Notices have been posted at the Reading Iron Works, at Reading, Pa., that hereafter no attention will be paid to orders for wages for employees and that only workmen can obtain their pay.

During this week the iron manufacturers of Youngstown, Ohio, will make a large shipment of their products to Chicago, to be placed on exhibition at the World's Fair. It is stated that the collection will comprise between 700 and 800 specimens from all the mills and furnaces in the Mahoning and Shenango valleys, covering all the different kinds and grades of iron and steel manufactured in the two valleys. Each specimen is marked with the name of the firm producing it and the capacity of the works for the manufacture of that particular kind of iron or steel. When the exhibit arrives at Chicago it will be placed with the Ohio exhibit of metals in Mineral Hall, but the collection will be so arranged as to give the public a fair idea of the extent and character of the iron and steel industries of the Mahoning and Shenango valleys. Much of the work in connection with the gathering of this exhibit was done by Jas. H. Nutt and H. S. Evans, secretary of the Mahoning & Shenango Valley Iron Manufacturers' Association.

Silas W. Pettit and Harry B. Gill, representing Thomas A. Hicks, a creditor and stockholder, have made application in the United States Circuit Court to have the Cumberland Steel & Tinplate Company placed in the hands of receivers. The liabilities were stated as amounting to \$55,000. Judge Dallas appointed William C. Dickey and Franklin H. Bowen receivers.

Fayette R. Plumb of Frankford, Philadelphia, has just increased his plant by the addition of a 150-horse power Buckeye engine and boiler. This is to be used in connection with the forge department, the power facilities for which have proved inadequate since that department was extended a short time ago.

Operations at James Hoooven's rolling mill, in Norristown, Pa., have been suspended for an indefinite period. The Hoooven pipe mill will shut down next week.

It is reported that the Eureka Iron Works, at Wyandotte, Mich., are to be greatly enlarged this spring by a new company having a capital of \$1,000,000, and that the plant will be turned into a steel plant.

The Emaus Furnace, at Emaus, Pa., has been put into blast.

In the courts at Pittsburgh last week a verdict for \$2797.83 for the plaintiffs was given in the case of C. R. Dallas, W. J. Kelly and G. K. Miles against the Columbia Iron & Steel Company of Pittsburgh. The suit was to recover for services rendered as trustees for creditors of the company.

The Vulcan Iron Works of Toledo, Ohio, will expend \$100,000 during the year in the erection of a new plant at North Toledo. Owing to a rapidly-growing business, the present works have become overcrowded and inadequate to the demands made on the company for their products. The new works will be not only much larger than the present plant, but will embrace all the improvements and latest appliances of the most modern establishments.

The work of remodeling the Rosena Furnace, at New Castle, Pa., is progressing rapidly.

The old River Furnace, in Cleveland, Ohio, operated under lease for a number of years by Pickands, Mather & Co., has recently been leased to Forsyth, Hyde & Co. of Chicago for a term of years. The lessees have opened an office in 301 Western Reserve Block, Cleveland, Ohio, which will be in charge of Mr.

Hyde. Repairs on the furnace will be commenced at once, and it will probably resume blast within the next four months. The output will consist of high-grade foundry iron.

There has been filed in court at Lebanon, Pa., an appraisal of the Lickdale Iron Company, which places the total assets at \$148,208.67, against total liabilities of \$357,568.86. The steel plant, with iron mill, 70 acres of land, with dam and water right, representing an investment of \$297,054.04, is valued at \$108,500 by the appraisers.

A reduction in wages in the blooming mill of the Pottsville Iron & Steel Company, Pottsville, Pa., of from 10 to 24 per cent. took place on the 14th inst. This is about the same reduction as was put into effect in the balance of the mills of this company on February 15, but no change was made in the blooming mill until a month later in order to allow some new appliances to get into good working order.

The Sterling Iron & Railway Company, who own 22,000 acres of land in Orange County, N. Y., have elected directors as follows: Magrane Cox, James P. Scott, P. T. Barlow, W. B. Anderson, Victor Guillon, Jay Cooke, Jr., and James P. Rowland.

There seems to be no indication that the furnace or mines of the Franklin Iron Mfg. Company of Franklin, N. Y., will resume operations in the near future, and officers of the company state that it may be a matter of several years before these industries are again started.

The stockholders of the Tonkin Boiler & Engine Works of Oswego, N. Y., have elected John German of Scranton, Pa., president; J. J. Tonkin of Oswego, vice-president and general manager; Joseph German of Scranton, treasurer; John German, Joseph German, John Cleland, James R. Mears, all of Scranton; John Eaton of Pittsburgh, Pa., and J. J. Tonkin of Oswego, directors. The new buildings of the company are nearing completion and the plant will probably be in operation by June 1.

The Dixon Engine Works of Newburg, N. Y., have been in operation since last October, and last week shipped the first production of their plant for out-of-town parties. It was an 80 horse-power engine, built for a New York concern. Two others exactly like it are being constructed at the works. There are orders enough on hand to keep the entire force busy until next fall. A traveling crane and a new engine will be added, and will have double the capacity of the one in use at present.

It is reported on good authority that the J. & J. Rogers Iron Company of Ausable Forks, N. Y., are to turn their attention to the manufacture of wood pulp.

The Rising Fawn Furnace, at Rising Fawn, Ga., went into blast last week after being idle 12 months.

A party of capitalists were in Piedmont, Ala., last week, looking to the completion of the furnace at that point. Arrangements are now being made for finishing the plant and putting it in operation.

The pipe works at South Pittsburgh, Tenn., are again in operation after a shutdown, and will soon be running to their full capacity.

The Sharon Iron Company's large sheet mills, at Sharon, Pa., which are being erected at their present works, will be the most modern in the country. The building will be 110 x 45 feet in dimensions. The addition to the firm's business necessitated the extra mills. They have ordered three 22-inch sheet mills and one 24-inch cold rolling mill from the Lloyd Booth Company of Youngstown, Ohio. The work on these mills is well under way and the new addition to the works will be completed as soon as possible. It means an increased number of hands, and will make the Sharon Iron Works one of the most complete and extensive in the State.

The new mills of the Brown-Bonnell Iron Company of Youngstown, Ohio, will in all probability be finished by the middle of May, at least so near completion that the remaining work will be of a minor character. The fine weather of the past few weeks has enabled the contractor to make such rapid progress that now the buildings are all but finished. It has not been definitely decided whether the furnace recently blown out will be rebuilt or not; it is likely, however, that it will not be.

Summers Bros. & Co.'s mill at Struthers, Ohio, is full in all departments and is now engaged in working principally light steel sheet. A new Adams-Haselton boiler has been put up and is one of the improvements to the new sheet mill, which will be built this summer.

During the week ending March 11, the 8-inch mill of the Alabama Rolling Mill Company of Birmingham, Ala., made 513,830 pounds of iron, the largest turn's work being 57,050 pounds on the night turn of 10th inst. Four other turns produced over 50,000 pounds each during

the week. W. H. Hassinger, vice-president and general manager, states that this is said to be about the largest week's work for any 8-inch mill with one heating furnace, particularly as there were 30 different sizes made during the week, which made it all the more difficult to get out large tonnage.

The following is reported to be a part of the slate for the next meeting of Tennessee Coal, Iron, & Railroad Company: H. F. De Bardeleben president, D. Roberts first vice-president, W. F. Aldrich second vice-president, A. M. Shook third vice-president, and N. Baxter, Jr., chairman.

The United States Iron & Tin Plate Mfg. Company of Demmler, Pa., have awarded the contract to the Heine Boiler Company of St. Louis, Mo., through their Pittsburgh office, for four 100 horse-power boilers, to be placed over their heating and puddling furnaces.

During February there were 4370 names on the pay rolls of the Pennsylvania Steel Company, at Steelton, Pa. On Saturday, March 18, \$79,000 was paid out in wages for two weeks' work.

The Millholland Tube Company of Reading, Pa., will make application for a charter of incorporation on Monday, April 10, with a capital stock of \$30,000. The new concern propose to manufacture seamless steel tubing of light weight on an extensive scale, under a patent process owned by Henry Millholland. The tubing manufactured will be specially adapted for use in the manufacture of bicycles. No site for the plant has been decided upon, but several are under consideration.

Machinery.

The Morgan Engineering Company of Alliance, Ohio, are building a large amount of new machinery for Reeves Bros. of Niles, Ohio, which will be placed in the new building of that concern to be erected at Alliance, Ohio. Included in this is an electric crane and a riveting machine which is claimed to be the largest ever built in the United States.

The Board of Directors of the Westinghouse Air Brake Company of Pittsburgh have declared a quarterly dividend of 5 per cent. and an extra dividend of 5 per cent., payable to stockholders of record on April 10.

The Ohio Foundry Company of Cleveland, Ohio, have been granted a charter, with a capital of \$75,000. The new concern will carry on the business of manufacturing, buying and selling metal castings, and will also carry on a general foundry business.

The Board of Trade of Alliance, Ohio, has closed a contract with Reeves Bros., boiler manufacturers, of Niles, Ohio, to remove their plant to Alliance at once. The firm have been tendered a bonus of \$10,000 and 15 acres of ground. Reeves Bros. have erected some of the largest iron work in the United States, and also manufacture bridge girders. Upon completion of their removal to Alliance, the works will be considerably enlarged, and they expect to employ an additional number of men.

Alexander Bros. of Philadelphia have just completed a 5-ply leather belt about 1½ inches thick, which is believed to be the thickest ever made. The belt weighs 2340 pounds, and was made for the McCullough Iron Company to drive a sheet-iron rolling mill over a pulley 19 feet in diameter.

Jas. G. Lindsay & Co. of Philadelphia have placed an order with a Schuylkill Valley boiler manufacturing company for 12 large horizontal tubular boilers for a large concern on the Hudson River, Lindsay & Co. furnishing the steel plates for same. They have also taken an order for 300 tons cable chain iron for the Boston Navy Yard.

Warren Webster & Co. of Philadelphia have just received an order from Europe for 20 of their feed-water heaters for immediate shipment. Orders from the home trade are also both numerous and urgent, so that the company's new works in Camden, N. J., which are expected to be completed in course of a few weeks, will give them much needed relief.

The Harrisburg Foundry & Machine Works of Harrisburg, Pa., report business in their line brisk, and mention the following sales: Three 300 horse-power Harrisburg Ideal tandem compound engines, with boilers, Weitmyer settings, and complete installation of power plant, for the Irwin Electric Light & Power Company of Irwin, Pa.; one 125 horse-power Harrisburg Ideal tandem compound engine and boiler, with Weitmyer setting, the contract also including the erection of a complete power plant, at Phoenixville, Pa. for the Eastern Engineering & Construction Company of Philadelphia, Pa.; four Harrisburg Ideal engines, aggregating 200 horse-power, and two Harrisburg Ideal electric railway engines, aggregating 350 horse-power, for W. R. Fleming & Co. of New York, and one 80 horse-power Harrisburg Ideal engine for Du Bois & Van Tassel, Du Bois, Pa.

The Gobeille Pattern Company of Cleveland, Ohio, are completing the erection of their shop No. 3, a three-story brick building 68 x 70 feet. The equipment of the new shop will be modern throughout, the very best appliances that could be secured having been placed in it. Operations will probably begin during April and about 75 additional men will be employed.

The Anthracite Brass Works of Tamaqua, Pa., have started a factory for the manufacture of stop cocks, brass castings and other goods. They also deal in plumbers' goods and undertake steam heating. As a specialty, they are turning out large quantities of wrought-iron nipples and long screws, which they claim to be able to put upon the market at exceptionally low prices.

The Detrick & Harvey Company of Baltimore, Md., are just completing for the Watertown Arsenal, Watertown, Mass., a planer 8 x 11 x 20. They report many orders in hand for other planers, and are making up a nice exhibit of their tools for the World's Fair. The company are gaining prominence as the makers of the first solarometer, a nautical instrument for accurately determining a vessel's position at sea and her compass error, by observation of the sun, moon or stars at any time any one is visible, without any elaborate calculations. The instrument was successfully tested on board the United States lighthouse steamer "Violet" in the Chesapeake Bay and Baltimore harbor. It occupies 6 feet in diameter of deck space, and is arranged with a constant level base, a cast-iron float in a large bowl containing 380 pounds of mercury. The bowl is supported by gimbals on a stand on the deck. The arcs are made of an alloy of aluminum, and the instrument is considered to be a beautiful piece of mechanism.

The Gray Iron Company, at Columbia, Pa., will enlarge their plant in order to meet the requirements of their increased business. The capacity of the foundry will be doubled by erecting a new building in connection with the present structure.

The Akron Forge Works of Akron, Ohio, will be removed to Elwood, Ind., and incorporated as the Elwood Steel Forge Company, with a capital stock of \$200,000. A plant will be erected at once, the main building of which will be 80 x 250 feet. A bonus of \$10,000 cash and 10 acres of land was the consideration which led to the change.

The G. N. Crane Company, recently incorporated, with a capital of \$100,000, for the purpose of manufacturing heavy machinery, will shortly begin operations at Minneapolis, Minn.

C. M. Rider & Co. of Chester, Pa., contemplate the erection of a structure, 96 x 115 feet in size, for the manufacture of steel furnaces, steam and electrical machinery, gas and other appliances, under patents owned by the company.

The Kernan Furnace Company will erect a new foundry at East Utica, N. Y., work on which will begin at an early day. The building will be 468 feet long and will contain a molding room 68 x 202 feet, cupola room 24 x 31, mill room 40 x 104, mounting room 50 x 162 and engine room 32 x 91 feet.

The Geometric Drill Company of Wilmington, Del., capitalized at \$300,000, have been chartered for the manufacture of drills.

The Kansas City Machine Shops, at South St. Paul, Minn., have been damaged \$20,000 by fire.

The Smith & Silk Machine Tool Company, Kenton, Ohio, report an extremely satisfactory demand for their specialty, planers, so far this year, January showing a very heavy demand, their shops for some time past being operated both day and night.

The Bass Foundry & Machine Works, Fort Wayne, Ind., state that they are running full in every department, and had they more room could extend their manufacturing facilities to great advantage. Their Corliss rolling mill engine department is especially busy. The company are now shipping to the New Castle Steel & Tin Plate Company two large engines, requiring nine cars for the transportation of the various parts.

The machine shop and foundry, including machinery and pattern, of George Dalrymple, at Fair Haven, Vt., was totally destroyed March 10. The building was a two-story frame structure valued at \$3000. The machinery was valued at \$4500; insurance, \$3500.

McIntosh, Seymour & Co. of Auburn, N. Y., are about to increase their plant by a large addition to their foundry and have purchased over 2 acres of land in the vicinity of their works. The proposed extension to the foundry will be 100 feet in length.

The work of enlarging the warehouse of the Gould's Mfg. Company of Seneca Falls, N. Y., is progressing satisfactorily. Two stories are

to be added to the building in order to accommodate the rapidly-increasing business of the company.

The Jamestown, N. Y., Engineering Appliances Company have been formed by A. U. Broadhead of Jamestown, and W. S. Howard of Buffalo, N. Y. A factory will be built and the present plant removed from Buffalo.

J. G. Speidel of Reading, Pa., is building a 15-ton traveling crane of 43 feet span for the Ohio Steel Company of Youngstown, Ohio.

Baughner, Kurtz & Stewart of York, Pa., have just completed, and are making delivery of a carload of machinery—part of the plant for the new powder mill built by the Swift Powder & Cartridge Company at Tallapoosa, Ga. The car contains a corning mill, capable of corning 1000 kegs per day; a mixer, a pulverizing cylinder, a machine for grading soda, and a hydraulic press for 500 tons pressure and a separating machine. This machinery was built from the designs and under the patents of Milton S. Johnson, a powder manufacturer of some note in this country, and will at once be placed in position so as to allow of the commencement of operations by May 1. The same concern have the contract for the gearing and power transmitting machinery for the mill, and will complete it very shortly.

McIntosh, Seymour & Co. of Auburn, N. Y., are about to increase their plant by an addition to their foundry of 100 feet, land having been acquired for that purpose.

The new foundry of Gaar, Scott & Co. at Richmond, Ind., has been completed and will shortly be occupied. The structure is 100 x 200 feet in size, equipped with five hydraulic cranes.

The Powell Planer Company of Worcester, Mass., have just completed and shipped another large metal-planing machine, the capacity of which is 8 feet in width, 14 feet in length. It weighs 43 tons. This company have recently built and shipped four locomotive rod planers of large size to the Pittsburgh Locomotive & Car Works of Allegheny, Pa. They state that they have orders for several planers of large capacity.

Last week the Robinson-Rea Mfg. Company of Pittsburgh, builders of rolls and rolling mill machinery, awarded a contract to the Shiffler Bridge Works of Pittsburgh for the erection of a new iron building to contain foundry, which will measure 200 x 134 feet. It will be equipped with two electric traveling cranes of 30 and 60 tons capacity, each with double trolley. These will be furnished by Wm. Sellers & Co., Incorporated, of Philadelphia. This new foundry is to take the place of the one destroyed by fire several months since. The roll foundry of the above concern was not damaged by fire and has been in constant operation right along, turning out a full equipment of the various sizes and kinds of rolls.

Last week the Leeburg Foundry & Machine Company of Pittsburgh awarded a contract to the Schultz Bridge & Iron Company of that city for the erection of an addition to their machine and roll turning shops, which will measure 90 x 90 feet and 30 feet in height. The above concern have secured the services of an experienced man to take charge of their roll department, and are now taking orders for sand and chilled rolls up to 24 inches in diameter. By June 1 the additions will probably be completed, and the concern will be able to furnish chilled rolls up to any size required.

The Aultman-Taylor Machinery Company, builders of agricultural machinery, at Mansfield, Ohio, have decided to erect a large boiler shop in connection with their present plant. Plans regarding the erection of this shop have not been completed, but it is the intention of the firm to make it a model shop, equipped with modern machinery and conveniences throughout. J. E. Brown, president of the above concern, is now in the East looking up machinery in connection with this proposed new plant.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh, Pa., have just closed a contract with Jas. Callanan of Des Moines, Iowa, for a 700 horse-power improved Aetna engine, one 18-inch muck and bar train complete, a 48-inch rotary squeezer with gearing for driving same and a heavy muck shear and a 24 inch lathe. This machinery is for a new mill which they are now building at Durango, Mexico.

Miscellaneous.

The Whiteley Harvesting Machinery business of Western and Central New York, the New England States and the foreign trade has been managed from Schenectady, N. Y., for the past 15 years by George W. Bennis. He, with S. H. Visscher, who have been connected with the business for 12 years past, has purchased the Whiteley firm's interest in the territory above named. The new firm will be

known as Bennis & Visscher. They will hereafter conduct the harvesting machinery business in their own name.

The Steward & Romaine Mfg. Company of 123 North Sixth street, Philadelphia, report a good many orders for their expansion bolts. They state that these bolts are being extensively used in the erection of buildings, and for other purposes. They are in use on the new Reading Railroad Depot and on the extension of the Broad Street Depot in this city, and large quantities have been supplied for the exposition buildings at Chicago. The bolts are also in use on the Suspension Bridge and the Passenger Elevator at Niagara Falls.

The stockholders of the Westmoreland & Cambria Natural Gas Company met at Pittsburgh last week and elected the following directors for the ensuing year: H. Darlington, Joshua Rhodes, Jr., J. M. Guffey, A. W. Mellon, Cyrus Elder and James McMillen. The directors organized by electing H. Darlington, president; A. W. Mellon, treasurer, and R. McKenzie, secretary.

Preparations are being made by the Detroit, Grand Haven & Milwaukee Railroad Company for extensive improvements in their machine shop and round house at Detroit, Mich. Both the machine shop and the round house will be rebuilt, and the former will be fitted to turn out a locomotive complete.

At the annual meeting of the stockholders of the Boyden Air Brake Company at Baltimore, Md., it was decided to increase the capital stock of the company \$1,000,000, of which one-half will be preferred and one-half common stock, the par value of both being \$100. The common stock capitalization has heretofore been \$2,500,000. This is the company's first issue of preferred stock, and it is stated that the money which it is expected to derive from its sale will be sufficient to carry on the operations of the company.

Kingston, N. Y., will have in about a month's time an important new industry. The United Columbian Electric Company of Philadelphia have leased a part of the Lawton Building, where they will establish a plant to manufacture their new patent electric motor. The company will employ a large force of skilled workmen. They will bring a number of mechanics and their families with them and will employ other men at Kingston. The motors manufactured by the company are to be used in trolley cars. The company expect to have all they can do, as there is a great demand for the motors. It is expected that the factory will begin operations by April 5. The foundry, which is being erected near the Lawton Building by Mr. Lawton, is nearly completed, and it is expected casting will be begun by April 1.

Proceedings have been commenced by the Elmira, N. Y., Coupling Mfg. Company to change their name. The company have ceased to manufacture couplings and have for six months been engaged in the manufacture of three and four bow carriage bow sockets. The company have more orders than they can fill with the present facilities. The plant is located at Horseheads, N. Y., and W. R. Compton is the business manager. He says that the company are contemplating quite an extensive enlargement of the plant and intend to take up the manufacture of other goods.

W. J. Loth, the principal stockholder in the Waynesboro Stove Company, Waynesboro, Va., who were closed down last October after being in operation about a year, has leased the plant for a term of years and put it into operation.

At a meeting of the stockholders of the Philadelphia Natural Gas Company held in Pittsburgh last week, the regular quarterly dividend of 1½ per cent. was declared, payable to stockholders of record April 1.

The Coe Brass Mfg. Company of Albany, N. Y., have elected the following directors: J. Wendell Parks, John Coe, A. B. Brown and P. F. Gaynor.

The firm of C. B. Cottrell & Sons, printing press manufacturers, of Westerly, R. I., have been incorporated in New Jersey under the firm name of C. B. Cottrell & Sons' Co., with a paid-up capital of \$800,000.

Work has begun at Spokane, Wash., on the new shops of the Great Northern Railroad.

Broomell, Schmidt & Co., Limited, of York, Pa., have in contemplation the erection of a brick factory building which will materially increase their capacity for business.

It is practically settled that the Harris Car Works of St. John, N. B., will be removed to Amherst, Mass. In referring to the matter the St. John Telegraph brands it as a disgraceful Government job, that by this transfer 300 people are deprived of their employment there and are forced to go abroad for work.

TRADE REPORT.

Our Cleveland reports show that as yet only a modest start has been made in Lake Ore purchases, but it is generally conceded that the Ore interests are now occupying a more favorable position, at least so far as Bessemer stock is concerned. It is probably well to emphasize the fact that the situation is radically different, so far as Bessemer and non-Bessemer Ores are concerned. The demand for the former promises to be very heavy, if the consumption of Billets as indicated by recent movements in the price be accepted as a criterion. The production this year will not be very seriously influenced by the Mesaba Range, the tremendous influence of which will be first felt next year.

In non-Bessemer Ores the situation is radically different. There is a good deal of unsold Ore in the docks, and the consumption, in the manufacture of Mill Iron, is bound to be heavily restricted. It is very doubtful whether this falling off will be compensated for by the increased use for the manufacture of Foundry grades. Northern furnaces have succeeded with the aid of cheap Lake Ore in crowding back Southern Iron to a notable extent, but it may be questioned whether this is likely to have any favorable effect on the price of non Bessemer Ores.

Bessemer Pig has reached \$14 squarely, with a moderate amount of business doing. Billets have gone up to \$23, at which sales have been made for forward delivery during the next two months. Of course the bulk of the Pig and Steel for the near future has been covered at lower prices at an earlier date, so that only the tardy buyers have been caught. The next few weeks will develop the fact whether consumption has seriously outrun production. Pittsburgh and Wheeling have taken the lead, but at present prices, if they are maintained, must be willing to sacrifice a large share of the distant markets which they have captured during the *regime* of low prices.

On Foundry Irons reports from the leading centers show little that is encouraging. Philadelphia notes a dull and a weaker market. Cincinnati and St. Louis record few sales and a drooping tendency. In Chicago the local furnaces are holding their price and have succeeded in securing a chance for a larger territory by a reduction in freights of 50¢ per ton to Mississippi points.

An Eastern Plate mill has secured the much-talked-of order for 6000 tons of Light Plates for Portland, Oregon. Our Philadelphia correspondent observes the first symptoms of an improvement.

In Structural Material the season has not yet fairly opened, so that the sharpest competition continues for what work comes into the market.

From all sections of the country the reports are reiterated of a very heavy volume of business in the coarser Wire products, Wire Nails and Barb Wire.

Bars are growing active in the West, but continue in a demoralized condition in Eastern Pennsylvania. The demand for Sheets is heavy in all quarters, but prices are very low. The Wrought-Iron Pipe trade is approaching its active season, which is reflected by a livelier demand for Skelp in some quarters. Prices for the raw material and the finished product continue phenomenally low.

Copper fails to show any backbone, a weak undertone characterizing the market. There has been more activity in Lead, both in St. Louis and in New York, at better prices. The Spelter manufacturers are beginning to talk of a combination, the usual refuge of a demoralized industry.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., March 21, 1893.

The condition of the Iron trade shows very little change from last week, and that little is not all in the direction of improvement. Prices in some lines are a shade better, in others they are easier, so that on the whole there is nothing to be claimed as a distinct advance. The remarkable feature is, that consumers are nearly all full of work, yet they claim to be taking it with little or no margin of profit, and are therefore all inclined to complain that they are doing a lot of business for very small compensation. Be that as it may, there is the best of reasons for believing that there are more hands employed in this city and its immediate vicinity and on fuller time than at any period on record. We refer, of course, to Iron workers only, which in the city alone aggregate between 30,000 and 40,000 hands. In view of such facts as these, it seems paradoxical to say that business is in poor condition, yet that is about the usual report. The Baldwin Locomotive Works alone are working nearly 5000 hands, turning out 20 engines per week; the Cramps and the Disstons make another 5000 between them, with quite a number of concerns running from 750 to 1500 each, among which may be mentioned the Southwark Foundry & Machine Works, Bement, Miles & Co., Wm. Sellers & Co., the Enterprise Mfg. Company, the Allison Mfg. Company; and with 500 to 700 each, may be mentioned such concerns as the Geo. V. Cresson Company, Hoopes & Townsend, G. & H. Barnett, Isaac A. Sheppard & Co., and the Abram Cox Stove Company. Up the Schuylkill Valley, and especially at Reading, similar activity prevails, but they all say the same thing—no margin for profit. It is difficult to explain why such is the case, but that it is so in many departments of trade is a fact too well known to admit of denial.

Pig Iron.—Business is dull, and prices less firm than they were a week ago. They are not quotably lower, but there is more pressure to sell, and buyers are conscious of the fact that the market is in their favor. Under such conditions they are less disposed to make bids, or when they do make them they are at lower figures than before, and in some cases such bids have been promptly accepted. The general situation is such that we cannot fairly change the list of quotations, because there has not been enough done to warrant it, and, besides, there is a great deal of business being done at former prices. Some furnaces are in fact so well sold up that they have no need to change their figures, no matter what others may do. All the same, any large consumer with money in hand can buy almost any grade of Iron he wants, Bessemer excepted, at fractionally lower prices than would have been considered last week or the week before. The reason for this is due to the fact that Iron "for Iron" is in excess of the demand, Steel having completely usurped the place of Iron. Comparatively speaking, there is no demand for Mill Irons, so that prices must of necessity weaken. Instead of buying 300 to 500 or 1,000 tons of Pig Iron per week, rolling mills buy Steel Billets, and there is no prospect that they will go back to the old method of puddling. With this fact so constantly in view, producers seem to have made up their minds to a long period of low prices, and are therefore disposed to either get cost down to meet the requirements of the market, or to go out of business. It is no use contending against the inevitable, so that during the next few months the contest is likely to be settled on either of the lines indicated. Hence, for the next two or three months, there is

little upon which to base expectations of improvement in prices, while there is a possibility that even the present low figures may be still further shaded before a reaction sets in. Meanwhile asking prices are nominally as follows for Philadelphia and equivalent deliveries, with 25¢ to 50¢ less on Southern brands at Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X.....	\$16.75	@	\$17.00
American Scotch, No. 2X.....	15.75	@	16.00
Standard Penna. (Lake Ore), No. 1X.....	14.75	@	15.00
Standard Penna. (Lake Ore), No. 2X.....	14.00	@	14.25
Standard Virginia, No. 1X.....	14.50	@	14.75
Standard Virginia, No. 2X.....	13.75	@	14.00
Virginia and Southern, No. 1X.....	14.00	@	14.50
Virginia and Southern, No. 2X Soft.....	13.25	@	13.50
Standard Penna. and Virginia Forge.....	13.00	@	13.25
Ordinary Forge.....	12.50	@	12.75

Freights.

Alabama Furnaces, Rail to Philadelphia.....	\$4.31 @
Alabama Furnaces, Rail and Water to Philadelphia.....	4.01 @
Alabama Furnaces, Rail to Baltimore and Harrisburg.....	4.06 @
Virginia Furnaces, Rail to Philadelphia.....	2.25 @	\$2.75
Virginia Furnaces, Rail to Harrisburg.....	1.50 @	2.00
Virginia Furnaces, Rail to Baltimore.....	1.75 @	2.25

Bessemer Pig.—There is a fair demand for this class of Iron, and prices are steadily maintained at \$15 to \$15.25, delivered (part Cornwall Ores); \$16 to \$16.25 for Standard Bessemer, and \$17.75 to \$18 for Low Phosphorus for Open-Hearth Steel purposes.

Steel Billets.—The market is not active, but prices are firm, with no present indications of weakening on the part of sellers. Asking prices for Western Billets delivered to mills in this vicinity vary from \$24.50 to \$25, according to quantity, date for delivery, &c., but sales are all in small lots, as large consumers are either supplied for the present or are unwilling to pay the rates asked. Eastern mills quote \$25 to \$25.50, delivered, and are fairly supplied with orders for some weeks to come. It is impossible to say what the ultimate outcome in regard to prices will be, but the impression in some quarters is that there will be no important reaction, while there is a chance of a still further advance. Consumers are not giving themselves much concern in regard to the matter, however, as shown by the fact that long deliveries are quoted 25¢ to 50¢ less than for March and April, but are not attracting very much attention even at the comparatively important difference in prices.

Steel Rails.—Only a small business is being done, and at unchanged prices, say \$29, f.o.b. cars mills. Reports from the mills are very favorable, however, all their other departments being crowded with work and the Rail departments nearly full to June.

Muck Bars.—Market very dull. Bids are hard to get at any price, but sellers could be found at from \$23 to \$23.50, delivered; possibly a little less than \$23 might be accepted on a low freight rate.

Bars.—Market a shade better in spots. Some mills with a reputation for specialties are running quite full, and most others appear to be doing better than they were a little while ago. Prices are very low, nevertheless, and while 1.65¢ @ 1.70¢ is quoted for best makes, city delivery, good-sized orders can be done better than that, in some cases close to 1.60¢, and at interior points 1.55¢ @ 1.60¢, f.o.b. cars mills.

Skelp.—The demand is fairly active, but prices show no improvement. The nominal quotation for Grooved is 1.55¢, delivered, but buyers can shade that, several sales having been made at 1.52½¢, with an intimation of even less than that on a specially desirable order.

Plates.—There is a moderately good demand, and, taking the market all the way through, it may be said that some symptoms of an improvement are beginning to manifest themselves. Mills are very full of work, and, while there is plenty of room for orders in between times, manufacturers are beginning to hesitate about taking much more unless at better prices. The advance in Steel is a "pointer" for them, and, while they are not asking a distinct advance, they are more inclined to refuse concessions, which amounts to about the same thing. The long-talked-of Oregon order, consisting of about 6000 tons Light Plates, has been taken by the Paxton Rolling Mill at Harrisburg, other mills in the vicinity being actively employed in miscellaneous orders for the local trade. General quotations are about as follows (delivered):

	Iron.	Steel.
Tank Plates.....	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell.....	2.00 @ 2.10¢	2.00 @ 2.10¢
Flange.....	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box.....	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities.....	3.25 @ 3.75¢	

Structural Material.—No very large amount of new business is coming out, but mills are amply supplied with work; the only difficulty is to get specifications. Prospects are considered good for the spring and summer months, and full employment seems to be fully assured for some time to come. Prices unchanged as follows: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.80¢ @ 1.90¢.

Sheets.—A very large business is being done, but at extremely low figures. Many of the leading dealers have been placing their season's orders, and, as a rule, at prices very much below anything ever mentioned up to this time. Best makes, however, hold their own pretty well, and for small lots are quoted about as follows:

Best Refined, Nos. 14 to 20.....	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 28.....	3.15¢ @ 3.20¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than here named:

Best Soft Steel, Nos. 14 to 16.....	2½¢ @ 2½¢
Best Soft Steel, Nos. 18 to 20.....	2½¢ @ 3¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 3½¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	70 and 5 % @ 70 and 10 %

Old Material.—The market is very dull, and while prices are generally steady and unchanged, the demand is so limited that pressure to sell extra quantities would easily result in lower figures. Asking prices are about as follows: Old Iron Rails, \$18 @ \$18.50, delivered; Old Street Rails, \$19 @ \$19.50; Old Steel Rails, \$15 @ \$16; No. 1 Railroad Scrap, \$15 @ \$16, Philadelphia, or for deliveries at mills in the interior, \$16 @ \$16.50, according to distance and quality; \$8 @ \$9 for clean new No. 2 Light Scrap; \$7.50 for old No. 2 Light Scrap; \$11.50 @ \$12 for Machinery Scrap; \$12 @ \$12.25 for Wrought Turnings; \$8 for Cast Borings, and nominally \$22 for Old Fish Plates, and \$13 @ \$14 for Old Car Wheels.

Wrought-Iron Pipe.—There is no improvement in this department. Manufacturers are not forcing business, but the right kind of orders seem to be taken at an extra 5 % to 10 % or more from nominal rates, which are supposed to be as follows: Butt, Black, 57½ %; Butt, Galvanized, 50 %; Lap, Black, 67½ %; Lap, Galvanized, 57½ %; Boiler Tubes, 67½ %, all sizes, new list; Casing, 62½ %, new list.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, March 22, 1893

Pig Iron.—The advance price made last week on No. 1 Local Coke has been maintained and sales have been made in fair quantities, which justifies the action of the manufacturers in endeavoring to get better rates. Business in this class of Iron has been only moderate, it is true, but sellers report a continued accession to the ranks of buyers from unexpected quarters. Many consumers who have already bought are still adding to their purchases and encouragement is felt in the continuance of a satisfactory volume of trade. The local railroads last week for the first time recognized the justice of the claims made by furnacemen here for lower freight rates in competition with Southern Iron. A reduction has been ordered on freight rates from Chicago to Mississippi River points of 50¢ per ton. This is expected to open to local makers an increased territory of considerable proportions unless the Southern furnacemen are able to secure a corresponding reduction in freight rates to the same locality. This remains to be seen. Southern Coke Iron has been sold only to a moderate extent, although inquiries are quite abundant. The Southern companies are generally not willing to make the deliveries that buyers ask; sales therefore are for reasonably prompt shipment. Competition is keen on this class of trade, but a reduction in our quotations hardly seems advisable under the circumstances. Lake Superior Charcoal is still quiet, but held firmly by producers. We revise our quotations as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.50 @ \$17.00
Local Coke Foundry, No. 1.....	13.75 @ 14.25
Local Coke Foundry, No. 2.....	13.00 @ 13.25
Local Coke Foundry, No. 3.....	12.75 @ 13.00
Local Scotch.....	14.00 @ 15.00
Ohio Strong Softeners.....	16.00 @ 16.50
Southern Silvery, No. 1.....	15.00 @ 15.00
Southern Silvery, No. 2.....	14.50 @ 14.50
Southern Coke, No. 2.....	13.25 @ 13.50
Southern Coke, No. 3.....	12.75 @ 13.00
Southern, No. 1, Soft.....	13.25 @ 13.50
Southern, No. 2, Soft.....	12.75 @ 13.00
Southern Gray Forge.....	12.00 @ 12.90
Tennessee Charcoal, No. 1.....	16.50 @ 17.50
Alabama Car Wheel.....	18.35 @ 19.85
Coke Bessemer.....	14.50 @ 15.00
Hocking Valley, No. 1.....	16.75 @ 17.00
Jackson County Silvery.....	16.75 @ 17.00

Bars.—Very encouraging reports have been received here from the Mahoning Valley mills. Business has been coming into them so well of late that they are now refusing to quote at the lowest terms recently made. Quotations outstanding have been withdrawn on quite a number of good sized contracts now under negotiation. The advanced prices asked will probably check business in that direction for a time, but will enable competing mills to fill up and thus relieve the market of the pressure recently felt. The smaller mills have been chasing the retail trade, thus causing considerable annoyance to jobbers. Excellent inquiries are in the market and it is expected that the good spring weather will very shortly stimulate the demand considerably. Quotations for mill shipment, Chicago delivery, range from 1.55¢ to 1.57½¢, half extras, on Bar Iron orders. A good business is reported in Soft Steel Bars, which are very steady at 1.65¢, Chicago, and upward, according to the maker. Store prices are unchanged at 1.70¢ @ 1.80¢ for Bar Iron and 1.75¢ @ 1.85¢ for Soft Steel Bars.

Structural Material.—The demand in a general way is considerably better; the present improvement, if continued, must necessarily bring better prices. Orders of considerable size for Universal Plates have been placed within the past week, at rates rather better than our recent lowest quotations. Beams, Angles and Channels as

yet show no improvement, comparatively small orders having been placed since our last report at prices below anything previously noted. Large building contracts are now nearer settlement than at any time this spring, and it is expected that the coming week will see some heavy deals closed. Quotations on mill orders, Chicago delivery, are as follows: Beams, 1.95¢ @ 2.10¢; Angles, 1.85¢ @ 1.95¢; Universal Plates, 1.90¢ @ 1.95¢.

Plates.—The Plate mills appear to be more in need of work than any other branch of the Iron or Steel trade. Comparatively small orders have attracted the presence of leading officers of manufacturing concerns, who generally leave such matters to their subordinates. The advance in Bessemer Pig Iron and Steel Billets is cited, however, as offering some reason for expecting a stiffening of rates even in this branch. Quotations on mill shipment, Chicago delivery, are as follows, for carload lots: Tank Steel, 1.85¢ @ \$1.95¢; Shell Steel, 2.10¢ @ 2.15¢; Flange Steel, 2.25¢ @ 2.30¢; Ordinary Fire Box, 3.50¢. Store prices continue as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.25¢ @ 2.40¢; Shell, 2.40¢ @ 2.60¢; Flange Steel, 2.70¢ @ 2.90¢.

Sheets.—Continued large inquiries for Light Sheets are in the market, and heavy buying is expected to continue for some little time. Common Black Sheets are still quoted in carload lots at 2.85¢, Chicago, with Sheet Steel selling at 10¢ @ 15¢ per 100 above this price. Galvanized Iron is in good demand, with prices for mill shipments steady at 70 and 10 % discount on Juniata, and 70 and 5 % for small lots from stock. Sheet Copper is unchanged at 30 % off from stock, with manufacturers still reporting their capacity for Light Sheets well engaged.

Merchant Steel.—The business of this month has latterly improved to such an extent that the volume promises now to surpass that of last month. Both mill orders and sales from stock are larger, but no changes have been made in rates, which are 2¢ @ 2.20¢, Chicago, for mill shipment on Open-Hearth Machinery and Spring Steel. Bessemer Tire is unchanged at 1.67½¢, with Bar Iron extras. Tool Steel is maintained at 6¢ @ 7¢ for ordinary according to quality, and specials at 12¢ and upward.

Billets.—Buyers have recently inquired for several thousand tons of Billets for consumption in this locality, at which local manufacturers have been obliged to turn away. The Joliet Works are still idle undergoing repairs, and there is no immediate prospect of their resumption. Small lots from the quantity held in stock are selling at \$25.

Rails and Track Supplies.—No large contracts for Steel Rails have been reported the past week. Prices are firmly maintained at \$30 @ \$32, according to quantity, and the improvement in the Billet market removes apprehension of any decline in price. Buyers appear to have entertained the hope that Steel Rail prices would break in sympathy with the low price of Billets, but the change in the situation may now cause them to place their orders more freely. Iron and Steel Splice Bars are still quoted at 1.65¢ @ 1.70¢; Track Bolts with Hexagon Nuts 2.60¢ @ 2.65¢, and Spikes, 2¢ @ 2.10¢.

Old Rails and Car Wheels.—Old Iron Rails are a trifle lower. Small sales are reported in the interior of the State at equal to \$18 here. Some holders, however, claim that they have refused higher offers. Old Steel Rails are quiet, with nominal prices \$11.25 for short pieces and \$15 for long lengths. Old Car Wheels have been in but light demand and are steadily held at \$14.75 @ \$15

Scrap.—Cheap qualities of rolling-mill stock are still in very much better demand than high grade material. Cast Scrap is also more freely selling than Wrought. Dealers continue to quote as follows per net ton: No. 1 Forge, \$15; No. 1 Mill, \$11; Sheet Iron, \$6; Pipes and Flues, \$10; Axles, \$20; Horseshoes, \$15.50; Fish Plates, \$16.50; Spikes and Bolts, \$14.50; Cast Borings, \$5.50; Wrought Turnings, \$8; Axle Turnings, \$9.50; Heavy Cast, \$11.25; Stove Plate, \$8.50 @ \$9; Malleable Cast \$9; Mixed Steel, \$10 @ \$10.50, gross ton; Leaf Steel, \$17.75.

Metals.—Lake Copper is quoted in carload lots at 12½¢, while casting brands are down to 11½¢. The Copper market has been gradually declining since the latter part of February. Spelter is in a little better condition, but quotations are as yet unchanged, carload lots being quoted at 4.05¢ and upward, according to the brand.

The Post Boynton-Strong Company state that for the first time in months they are able to report "increased activity in Pig Lead, and a better demand. The falling off of production in the West is already felt at the large centers, and arrivals are scarcely sufficient to meet consumptive demands. The shortage may be only temporary, yet, while it lasts, prices are liable to be pegged up just so much as the situation will allow. Consumers will not go far wrong if they anticipate near future requirements only. Offerings for the most part are entirely withdrawn. Sales as yet have not been large, but the price is advanced to 3.80¢, with but little metal available."

Forsyth, Hyde & Co. of Chicago, Pig Iron commission merchants, who have gradually built up a large local business, are extending their lines very considerably. They have opened a branch office in Room 301, Western Reserve Building, Cleveland, another in Room 712, Lewis Block, Pittsburgh, and will at an early day establish a third branch in Cincinnati.

Pittsburgh.

(By Mail.)

Office of The Iron Age, Hamilton Building, }
PITTSBURGH, March 21, 1893. }

Interviews with a number of the leading Iron and Steel manufacturers of this city during the past few days elicited the information that the prospects for a heavy business in nearly all kinds of Raw and Finished material are highly encouraging. The volume of business to-day is much heavier than one month ago, and when spring trade has fairly opened up there will be a still heavier demand for Iron and Steel products. A very pleasing feature in connection with the improvement in the business situation is the fact that it not only applies to demand, but also to prices, although in not so marked a degree. Since February 1 we have seen Bessemer Pig advance nearly \$1 ¢ ton, and it is in active demand to-day at \$14 ¢ ton. Billets are fully \$1.50 ¢ ton higher, while the immediate products of Soft Steel have also scored material advances. In Structural Material, Plates, Steel Bars and Merchant Steel there is too little difference between the price of the Finished and the Raw Material, and makers state that these must advance in price on account of the sharp advances in Pig and Billets. The Ore question is an important factor in the situation just now. The impression prevails that just as soon as the Ore sellers and furnace owners come to an understanding, its immediate effect will be in the nature of further advances in Bessemer Pig and Billets. More anxiety has been shown during the past week by the furnacemen to close up with the Ore people than existed several weeks

ago. It is accepted as a fact that the shoving up of prices for Pig by the furnacemen has given considerable strength to the backbone of the Ore interests, and further advances in Pig will continue to strengthen the position of the Ore men.

Muck Bars—Demand is very light and prices are unchanged at \$24.25, Pittsburgh, for best grades. It is probable that if Billets continue to advance in price that the price of Muck Bars and also the demand will show an improvement, as some concerns may again take up the use of Muck Bars to a limited extent.

Ferromanganese.—A slight improvement in demand is reported, but prices are unchanged on a basis of \$59, Pittsburgh, for 80 %. It is claimed that this price is not being shaded, although Ferro is quoted in New York City at \$56, which would mean \$58.40, Pittsburgh.

Structural Material.—The improvement in demand for Shapes of the various kinds continue, the call for small-sized Beams and Bridge work being particularly active. Work will soon be commenced on three new buildings in this city, in which more or less Steel will be used. These are the new building of the Methodist Book Concern, to be erected on Penn avenue, the Harper Building at Liberty avenue and Eighth street, and the Arbuthnot Building, next door. Prices during the week have undergone no material change, and we quote as follows: Beams and Channels, 1.80¢ @ 1.90¢, Pittsburgh; Angles, 1.65¢ @ 1.70¢; Z Bars, 1.85¢ @ 1.90¢ and Tees 2¢ @ 2.10¢. These prices continue to be shaded more or less in Eastern and Western markets where Pittsburgh enters into competition with makers located nearer point of consumption.

Plates.—Demand continues very satisfactory, but the cutting in prices referred to in previous reports continues. The capacity of Pittsburgh mills is very large, and in order to dispose of their product other markets are invaded, with the result that prices very often are shaved down to a point where it is believed there is very little, if any, profit to the makers. Pittsburgh has been credited with selling Tank Steel at 1.75¢, delivered with a freight rate of 15¢, which means 1.60¢ at works. There has probably been more competition in this class of product than in any of the other kinds. For ordinary lots we quote as follows: Ordinary Fire Box, 2.50¢ @ 2.75¢; Best Quality, 3¢ @ 3.25¢; Flange, 2¢ @ 2.10¢; Tank, 1.65¢ @ 1.70¢; Shell, 1.80¢ @ 1.90¢; Universal Plates, 1.70¢ @ 1.75¢.

Wire Rods.—A moderate amount of business is going and prices seem to be maintained on the basis of \$30, Pittsburgh. At this time there are fewer buyers of Wire Rods than ever before, for the reason that Wire and Wire-Nail makers as a rule roll their own Rods, and in some cases have a surplus left over to be sold in the open market. The claim is made that should Billets continue to advance there must be a further advance in price of Rods, which even at \$30 are said to be too low in comparison to present price of Billets.

Steel Rails.—A moderate amount of business is going, but no large orders have been placed for some little time. Edgar Thomson went on Billets on Sunday, the 19th inst., at 6 p.m. The old price of \$29 at mill for standard sections still prevails.

Pipes and Tubes.—The market is in about the same condition as noted in our last report. There is a fair demand going for smaller sizes of Pipes and Tubes, with a prospect of an increased demand for the larger sizes. One contract for about 30 carloads was placed last week at very close price. Makers hope that with a better demand there will come an improvement in prices, which have been some-

what demoralized for the past two or three months.

Wire and Cut Nails.—The recent advance in Wire Nails to a basis of \$1.50, Pittsburgh or Cleveland, in carload lots, is being firmly maintained, and in some few cases mills have refused to take additional contracts at this price, giving as a reason that their product is sold up for the next two or three months. Before the recent advances in prices of Wire Nails were made, a very heavy business was done, and buyers coming in the market at this time are not placing their orders as freely as would have been the case had prices not advanced. However, with the mills in this district and also in Cleveland well sold up, the prospects of any concessions in prices being made are very slim. For less than carload lots \$1.55 @ \$1.60 is being obtained. In Cut Nails the situation, both as regards demand and prices, is not very satisfactory, but it is true that the demand has improved to some extent. The claim is made that the recent card is not being observed, but is being shaded more or less. There still continues to be a fair consumption of Cut Nails in Pittsburgh, but the greater part of the output is sent to Southern points.

Merchant Steel.—There has been no material improvement in demand, and the eagerness of mills to book business continues to result in very low prices being named. Indications, however, point to an early opening of Spring demand, when an improvement in prices will undoubtedly take place. For Machinery, Tire and Spring Steel there is a considerable range in prices, while Plow Steel is held at 1.90¢ @ 2¢. There is a fair demand for Tool Steel with prices ranging from 6¢ and upward, according to quality.

Wire.—The demand for both Plain and Barb Wire shows no abatement, and many of the mills are so crowded with orders that they are unable to take additional contracts calling for delivery within the next three or four months. The recent advance in prices is being firmly maintained and we continue to quote Painted Barb Wire at 2.10¢, and Galvanized at 2.50¢ in carload lots, f.o.b. cars Pittsburgh. Plain Wire is also in heavy demand, with prices ranging from 1.65¢ to 1.70¢ for Nos. 6 to 9, inclusive. Should further advances in price of Steel take place, makers claim that it will be absolutely necessary to again advance prices of Wire of all kinds.

Sheets.—Since our report of last week, several good contracts have been placed, one consisting of 13,000 bundles. Prices are very firm and the tendency is to higher values. We continue to quote Ordinary Box Annealed Sheets as follows: No. 24, 2.45¢ @ 2.50¢; No. 26, 2.55¢ @ 2.60¢; No. 27, 2.65¢ @ 2.70¢. For Soft Steel Sheets, about \$1 per ton advance on above prices is obtained. In Galvanized Sheets, trade is very satisfactory, and the demand promises to be heavy for some time to come. Discounts are unchanged, ranging from 70 and 5% to 70 and 10%, according to order, with some concerns refusing to sell at last-named price.

Scrap Material.—The demand for all kinds of Scrap material is very light, and as a consequence prices are weak. Probably the best department of the Iron and Steel Scrap trades at this time is Old Steel Rails, which are in fair demand with a scarcity of supply. No. 1 Railroad Wrought Scrap is selling at about \$14.25 @ \$14.50 ¢ net ton; Leaf Springs are in fair demand at \$20.50 @ \$21 ¢ gross ton; Coil Springs are very dull and we have not heard of a transaction for some time. In Old Rails there is a fair inquiry for short lengths of Steel Rails, and these are bringing from \$15.50 to \$16 ¢ gross

ton; long lengths are quoted at \$15.25 and miscellaneous at \$15. Iron Rails are in poor demand and are obtainable at \$19 @ \$19.50, delivered Mahoning Valley.

Connellsville Coke.—For the week ending March 11 there were 12,880 ovens in the Connellsville region in blast, and 4449 idle, with a total production for the week of 122,697 tons. Prices have undergone no change since our last report, and we continue to quote Furnace Coke at \$1.60 and \$1.70 in tons of 2000 lb, f.o.b. cars in Connellsville region, the first named being the ruling price. Foundry Coke is held at \$2.15 to dealers and \$2.30 to consumers.

(By Telegraph.)

Pig Iron.—Within the past week there has been a further advance in Bessemer Pig of fully 50¢ per ton, and prices are firm to-day on a basis of \$14, Pittsburgh. Furnaces in the Pittsburgh district are sold up for periods ranging from 30 days to three months, and the same is true in a large measure of stocks in the Mahoning Valley. A large producer in this district, in discussing the present activity in Bessemer and the higher prices ruling, stated that indications were favorable for present prices being maintained, with a probability of still higher values just as soon as the Ore and furnace men come to an understanding on prices for this year. For some months previous to February 1 buyers bought Iron only as they needed it, keeping stocks reduced to a minimum right along. In the meantime the consumption of Soft Steel was steadily increasing, causing an increased consumption of metal, and about a month ago, when a number of the largest Steel concerns came into the market as buyers of Pig, the fact was made apparent that consumption had caught up to and passed production, and as a result Bessemer Iron is fully \$1 per ton higher than it was six weeks ago. One concern in this district is credited with buying about 40,000 tons of Bessemer within the past two months. Furnaces in the Mahoning Valley are favorably situated for maintaining prices, and are asking \$13.50 at furnace, equal to \$14.10, Pittsburgh. Gray Forge is in light demand, with a sale of 1500 tons of off grade reported at \$12.50 at furnace, or \$13.10, Pittsburgh. We quote as follows:

Neutral Gray Forge.....	\$12.25 @	cash.
All-Ore Mill	12.50 @	"
No. 1 Foundry.....	13.75 @	\$14.00 "
No. 2 Foundry.....	12.75 @	13.00. "
Charcoal Foundry No. 1	17.00 @	18.00. "
Charcoal Foundry No. 2	16.50 @	17.00. "
Bessemer Pig.....	14.00 @	14.10. "

We note a sale of 500 tons of Bessemer for March delivery at \$13.30 at Valley furnace, or \$13.90, Pittsburgh; also 6000 tons for April, May and June delivery at \$13.50, Valley furnace, or \$14.10, Pittsburgh, and 5000 tons for March, April and May delivery at \$14 Pittsburgh.

Billets.—As an indication of the condition of the market we can state that an offer made within the past week to a Pittsburgh concern to take all their surplus Steel up to July 1 at a price equal to \$23 at makers' mill was declined. Probably never before have makers in this city had their productions taken up so far ahead as at present. Several concerns have no Steel to sell up to June 1, and others for the next 60 days. The same condition of affairs exists at the Steel mills in the Wheeling districts. Of course, the greater part of this business was booked at prices much below those now ruling, but buyers coming in for Steel at this time for March, April and May delivery cannot get in below \$23, with a probability that the price will be \$24 within the next month. The Duquesne Mill has closed down for improvements and repairs, which will require from a month to six weeks to complete. The

present 7-ton converters will be thrown out and 12-ton vessels will replace them.

In the meantime Edgar Thomson has gone on Billets. We note a sale of 1000 tons of Billets for close delivery at \$23, delivered at buyer's mill, there being a switching charge of \$2.50 per car, netting the maker about \$22.90. Also 1000 tons for March and April delivery, at \$23 at makers' mill, and 1500 tons for March, April and May delivery at \$23.10 at makers' mill, March.

Merchant Bars.—While there has been an improvement in volume of business, there is still much competition among mills for new business, which continues to keep prices lower than they should be when the present cost of Billets is considered. We quote Steel Bars at 1.55¢ @ 1.60¢ half extras, Pittsburgh. In the Mahoning Valley Bars are held at 1.40¢ @ 1.45¢, half extras, with some concerns refusing to sell at first-named prices.

Freights.—At a meeting of the Central Traffic Association held in Chicago recently, it was decided to make the usual summer reductions in rates on articles of Iron and Steel manufacture, to take effect on April 1 next. In conformity with the above, rates from Pittsburgh and points taking Pittsburgh rates, on articles of Iron and Steel manufacture, to Chicago will be reduced from 17½¢ to 15¢ in carload lots, and from 20¢ to 17½¢ in less than carload lots per 100 lbs. To East St. Louis the new rates will be 22¢ @ 18¢, as against 25¢ @ 22¢; Cincinnati, 15¢ @ 12¢, as against 17¢ @ 15¢; Indianapolis, 15¢ @ 13¢, as against 18¢ @ 15¢; Cleveland, 9¢ @ 8¢, as against 13¢ @ 15¢; Cairo, Ill., 24½¢ @ 21¢, as against 28¢ @ 24½¢; Louisville, Ky., 19¢ @ 16¢, as against 22¢ @ 19½¢; Buffalo, N. Y., 10½¢ @ 9½¢, as against 13¢ @ 10½¢; Terre Haute, Ind., 17½¢ @ 15¢, as against 20¢ @ 17½¢. It is probable that in a short time reductions will also be made on articles of Iron and Steel manufacture for shipment to Eastern points.

Between Pittsburgh and	Group 1. Per ton.	Group 2. Per ton.
Mahoning Valley, Shenango Valley & Wheeling, W. Va.	\$0.60	\$0.75
Steubenville, Ohio.....	.50	.65
McKeesport, Pa.....	.30	.30
Braddock, Pa.....	.30	.35
Dunbar, Pa.....	.60	.75
Kittanning, Pa.....	.50	.55
Johnstown, Pa.....	.75	.80
From Pittsburgh, Beaver Falls, Homestead, Rankin, Braddock and McKeesport to	Group 1.	Group 2.
Albany, N. Y.....	\$2.30	\$2.60
Baltimore, Md.....	1.70	2.00
Boston, Mass.....	2.70	3.00
Buffalo, N. Y.....	1.25	1.25
Findlay, Ohio.....	1.75	1.75
New York City, N. Y.....	2.30	2.60
Oswego, N. Y.....	2.30	2.60
Philadelphia, Pa.....	1.90	2.20
Rochester, N. Y.....	1.80	2.00
Syracuse, N. Y.....	2.30	2.60
Utica, N. Y.....	2.30	2.60

Rates shown under head of Group 1 will apply on Pig Iron, Mill Cinder and Scale, per gross ton, in carloads of 12 gross tons and over.

Rates shown under head of Group 2 will apply on Billets (Iron or Steel), Blooms (Iron or Steel), Borings (Iron or Steel), Chain Irons (in coils), Crop Ends (Iron or Steel), Ingots (Iron or Steel), Muck or Puddle Bars, Old Car Wheels and Axles, Old Rails, Scrap Iron, Scrap Steel, Scrap Tin, Slabs, unfinished (Iron or Steel), and Wire Rods (in coils), per gross ton, and on Ingot Molds and Cast-Iron Pipe per net ton, in carloads of 12 tons, net or gross, and over.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, March 22, 1893.

Pig Iron.—The market fails to show any improvement so far as prices are concerned. The volume of business shows some increase over last week, but the prices at which business is accepted are very low. Charcoal Irons do not show any particular tendency toward weakness, the Southern Irons being the leaders in this respect. We hear of some furnaces whose stocks of Iron continue to accumulate, and it is natural to suppose that they will accept lower figures, if it is possible to market their product by so doing. At the moment the market is in a trying position, and it is difficult to anticipate what the outcome will be. When Gray Forge was first sold at \$10 at the furnace those whose statements were considered of some account claimed it was impossible for furnacemen to sell below this figure and make a profit. Notwithstanding this, Gray Forge sold at \$9 per ton, and is to-day freely offered at \$8, f.o.b., cars Birmingham, and an order for, say, 5000 tons, would no doubt be taken for less than the price just named. No. 2 Foundry and No. 1 and No. 2 soft Irons are in much the same condition. The consumptive demand is steady and shows a gradual increase, and yet prices continue to grow weaker daily. We quote as follows for cash, f.o.b., cars Birmingham.

Southern Coke, No. 1 Foundry, \$13.50 @	\$14.00
Southern Coke, No. 2 Foundry, 12.25 @	12.50
Southern Coke, No. 3 Foundry, 11.75 @	12.00
Southern Gray Forge.....	11.25 @ 11.50
Southern Car Wheel.....	18.00 @ 18.75
Lake Superior Car Wheel.....	17.00 @ 17.50
Ohio Softeners.....	16.25 @ 17.00
Missouri Charcoal, No. 1	
Foundry.....	13.50 @ 14.00

Bar Iron.—Mills report an active trade, and in one or two instances are practically out of the market so far as certain sizes are concerned. They quote 1.57½¢ @ 1.60¢, f.o.b. cars East St. Louis. Jobbers ask 1.70¢ @ 1.75¢, according to quantity. The outlook is encouraging for a large volume of trade, but prices are hardly likely to go higher.

Barb Wire.—The volume of business is exceedingly heavy, and local mills have their hands full. It is a difficult matter to induce jobbers and country dealers to place orders any length of time ahead. The result is they all come in at once and want the Wire shipped immediately. This is what the mills are trying to do, but they find it impossible. Prices are firm, as follows: Painted, in carload quantities to jobbers, \$2.20; Galvanized, 40¢ per cwt. additional.

Wire Nails.—The market for Wire Nails continues to improve, and mills are crowded with orders. Locally, prices of Plain Wire and Wire Nails have been advanced 5¢, making the price of Wire Nails \$1.75 for carload quantities to jobbers. The latter report a heavy demand.

Pig Lead.—The market has been unusually active during the past week, and sales of something like 1000 tons are reported at 3.75¢. The firm tone of the market is noticeable, and, as both London and New York markets are strong, a still higher price is not improbable. Consumers have not been buying very heavily lately and now appear to have all entered the market simultaneously, hence the advance. At the close the market is 3.77½¢ @ 3.80¢.

Spelter.—This metal does not reflect the advance in Pig Lead, as was expected, and offerings are quite free at from 3.97½¢ to 4¢ for delivery during the next 60 days.

Stocks continue to accumulate, and

while this condition remains unchanged higher prices are not likely to occur.

Freight Rates.

Pig Iron.	Per ton.
Birmingham, Ala., to St. Louis.....	\$3.25
Chattanooga, Tenn., to St. Louis.....	3.00
Sheffield, Ala., to St. Louis.....	2.80
Barb Wire and Wire Nails.	Per cwt.
Pittsburgh, Pa., to St. Louis.....	22¢
Cleveland, Ohio, to St. Louis.....	18¢
Anderson, Ohio, to St. Louis.....	14¢

Louisville.

LOUISVILLE, March 18, 1893

There has been no change in price, and the buying has been fair, one order of 2000 tons Soft being the largest placed. There have been statements made from the South of lower prices than those commonly current, \$8 to \$8.25 for Gray Forge Birmingham; but it is not considered true, and no evidence can be obtained of any sales having been effected at such figures. It is not thought possible that lower offers can be made, and, while consumers realize this, many do not feel like purchasing for long deliveries, preferring to buy from hand to mouth.

The iron from the Middlesborough furnaces is now on the market, and has been well received. Their position is one that will enable them to make iron in competition with any other districts, as both their ore and coke supply is near at hand, and their plant has no superior in the South.

The new Florence furnace will go in blast immediately to run on a special iron to take the place of Ohio Softeners. This will be known as Spathite iron, and it is felt that the quality will be such as to lead to the putting of an additional furnace on the same ore. Already a large amount of their iron has been placed with two large companies who have been using that made by the old furnace with good results, one of the largest pipe shops South having the iron shipped to Bessemer, where it costs much more owing to freights than the very best Southern Softeners. We quote for cash cars Louisville:

Southern Coke, No. 1 Foundry...	\$13.00 @ \$13.25
Southern Coke, No. 2 Foundry...	12.00 @ 12.25
Southern Coke, No. 3 Foundry...	11.00 @ 11.25
Southern Coke, Gray Forge...	10.75 @ 11.00
Spathite.....	13.25
Southern Charcoal, No. 1 Foundry	15.00 @ 16.00
Southern Car Wheel....	17.50 @ 17.75

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts.,
CINCINNATI, March 22, 1893.

There has been a moderate volume of business in Pig Iron during the week, the demand being mainly for immediate or short forward delivery, no sale being reported exceeding 1000 tons, and only a few of this quantity. Buyers decline to purchase for more than three or four months ahead, for they believe that Iron will be no higher; and while there is no urgency to sell for long delivery, the evidences are that purchases could be made for all this year on the basis of current prices. The large Iron companies in the South are doubtless maintaining prices having refused \$8, f.o.b. Birmingham, this week for Gray Forge; but it is well known that sales have been made by other parties on this basis. There is little Mottled Neutral Coke Iron offered; but that sympathizes with Gray Forge in weakness. There has been no movement in Charcoal Iron, and, while the market appears to be weak, quotations are nominally unchanged.

Foundry.

Southern Coke, No. 1.....	\$13.25 @ \$13.50
Southern Coke, No. 2.....	12.00 @ 12.25
Southern Coke, No. 3.....	11.25 @ 11.50
Ohio Soft Stone Coal, No. 1.....	16.00 @ 16.25
Ohio Soft Stone Coal, No. 2.....	15.00 @ 15.25
Mahoning and Shenango Valley...	14.75 @ 15.00
Hanging Rock Charcoal, No. 1....	18.00 @ 19.25

Hanging Rock Charcoal, No. 2....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 1.....	15.50 @ 15.75
Tennessee and Alabama Charcoal, No. 2.....	14.50 @ 14.75

Forge.

Gray Forge.....	10.75 @ 11.00
Mottled Neutral Coke.....	10.50 @ 10.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel....	18.00 @ 19.00
Lake Superior Car Wheel and Malleable....	17.75 @ 18.00

Hyatt, Matthews & Co. have issued a pamphlet calling attention to the "Process" Foundry Iron. They quote the following analysis made by J. Bloodgett Britton:

	No. 1.	No. 2.	No. 3.
Graphitic carbon.....	3.990	3.393	3.450
Combined carbon.....	0.380	0.240	0.340
Silicon.....	2.200	2.200	2.200
Sulphur.....	0.012	0.012	0.012
Phosphorus.....	0.007	0.007	0.007
Manganese.....	0.533	0.533	0.533

Boston.

Office of *The Iron Age*, 146 Franklin St.,
BOSTON, March 21, 1893.

The demand for certain classes of material, such as Plates, Bars and Tubes, is quite satisfactory, and it is not saying too much when we state that more Plate has been sold here the past week than in any two preceding weeks this year. One particularly good lot called forth the lowest prices ever named in this territory, but the mill seemed grateful for it at even that price. The quiet spot has been merchant Steel, the demand for which has been quite light and little prospects of betterment. Collections, except in rare cases, show a decided improvement over a couple of months ago.

Pig Iron.—In Pig Iron the market is steady, with a very fair trade. The recent pinch for small lots of Iron on the spot seems to be over since the position of transportation has greatly changed, under better weather, and more Iron has arrived on previous contracts. In a large way quotations on Iron are nominally unchanged, though it is pretty well understood in the trade that furnace concerns having large lots of Iron of a particular grade that they are anxious to move are making slight concessions. The quotations on Southern Iron laid down on the wharf in Boston are: No. 1, \$15.50 @ \$16; No. 2, \$14.50 @ \$15; No. 3, \$14 @ \$14.50. Virginia Iron, of which a good deal is being used in this market, is quoted from 25¢ to 50¢ per ton higher than Alabama Iron. The New England foundry people are still busy, and using a good volume of Iron, chiefly Southern; but this they are buying on their wants, with very little notion of speculation. Pennsylvania Iron is quiet so far as this market is concerned, with the quotations for Iron at shipping port at: No. 1, \$15 @ \$15.50; No. 2, \$14.50 @ \$15; Gray Forge, \$13.50. Other Western Irons are quoted at \$17.50 @ \$19, according to quality and point of shipment.

Bar Iron.—The Bar Iron market is quiet for New England or real Iron Bars. The death of Mr. Waugh, of the Wareham Rolling Mills, takes away another of the last remaining manufacturers of Bar Iron in New England. It is not yet known in the trade as to whether his mills will be carried on beyond the running out of the material on hand, though it is understood that this will surely be done. Bars are quotable at: Ordinary, Old Material Bars, from mill, 1.60¢ @ 1.65¢; from store, 1.65¢ @ 1.70¢. The best known Bars from puddled Iron are quoted at 1.85¢ @ 1.95¢ from mill, from store, 2.10¢ @ 2.1¢. Norway and Swedish Irons are admitted to be

easy though nominally quoted the same, \$65 @ \$67 for Bars and Shapes, out of store.

Steel and Steel Plates.—The market on Bessemer Billets is reported, from Pittsburgh, as fully \$1.50 @ \$2 per ton higher than before the rise in Bessemer Pig, and principals inform their agents here that the manufactured product cannot long remain low if the advance in Billets is sustained. At the same time, under the tremendous struggle for business, there is little doubt what concessions are being made, especially where large contracts are concerned. This market is nominally unchanged, however, at: Bessemer Steel, 2.05¢ @ 2.20¢; Machinery, 2¢ @ 2.15¢; Tire and Sleigh Shoe, 2¢ @ 2.10¢; American Cast, 7¢ @ 7.5¢; English Cast, 13¢ @ 15¢; American Steel Rails, \$29 at mill. There has been some business in heavy sections of Steel Rails with the New England roads of late, but light sections are still rather quiet, though a good business is expected. There is more business reported in Steel Plate, but the representatives of some of the largest houses in the country here say that this business is at prices so seriously low, with so little regard being given to the quality of the Steel in question, that they are above the market, and do not desire to be otherwise. At the same time, the quotations that are given, and are claimed to be the nominal prices, are at: Tank, 1.90¢ @ 1.95¢; Shell, 1.95¢ @ 2.05¢; Flange, 2.1¢ @ 2.35¢; Fire Box, 2.60¢ @ 3.30¢.

Structural Iron.—Structural Iron continues to be the prominent feature of the market here. There is decidedly a good trade in the way of contracts. A contract for some 300 tons of Beams was placed the other day, and it is known by those deepest in the trade that there are specifications out that well amount to at least 2000 tons of Beams, and those specifications are likely to be closed within a week. The recent fires in Boston have set the building commissioners to thinking, and all the building statutes will be rigidly enforced, for the present at least. This will call for much stronger and heavier Beams than were being used under the old form of building. It is also a curious feature, that is only lately being figured out, that under the present low cost of Steel Beams and the increased cost of Hard Pine Beams, the former are found to be the cheaper, and in instances where greater beams are being required by the commissioner's permission is being asked to substitute Steel for Hard Pine Beams, and the permission is being granted. This feature is likely to increase the demand for Steel Beams. But, in spite of the good trade, the competition for trade is so strong that prices on Structural Iron or Steel are really easier than formerly noted: Beams and Channels, 2.10¢ @ 2.20¢ from mill; from store, 2.1¢ @ 3¢. Angles, 2¢ @ 2.10¢ from mill; from store, 2.1¢ @ 2.5¢; Tees, 2.40 @ 2.5¢ from mill; from store, 2.5¢ @ 2.7¢.

Nails.—Nails slowly improve in demand, with prospects good. The latest reports from the West are of a nature to make Nail manufacturers feel stronger. Cut Nails, both iron and steel, are quoted here at \$1.60 per keg for small lots and at about \$1.50 in large lots. Steel Wire Nails are reported a little firmer in the West, though the market here is at about the same figures as are mentioned on Cut Nails.

Scrap.—There are now a few more buyers for Scrap Iron than there were in the midwinter when trade was dull, but the supply is ample and prices have not improved. No. 1 Wrought is quoted at 50¢ @ 55¢ per 100 lb for regular lots, with special lots of regular sizes, and old Horse-shoes, quoted at 60¢ @ 70¢, according to quality. Light Iron is dull at 30¢ @ 40¢, as to quality.

Bar Iron.—Despite the business just placed and in prospect prices have gone down at least another dollar a ton and mills are accepting orders for prices they refused one month ago. Several good lots have gone to the mills the past week. From stock the demand is quiet. We quote from mill 1.75¢ @ 1.80¢. From stock, 1.80¢ @ 2¢.

Plates.—Boiler material of all kinds has been active, but, as stated below, desirable orders are being placed at very advantageous figures for the buyer. Several carload lots have gone out of town during the last few days. Our quotations are: Tank Steel or Iron, 1.80¢ @ 1.90¢; Shell, 2.10¢ @ 2.20¢; Flange, 2.35¢ @ 2.45¢; Fire Box, 2.50¢ @ 2.60¢.

Merchant Steel.—Nothing has transpired since our last report to affect prices one way or the other. We continue our quotations of last week. Machinery Steel, 2.17½¢ @ 2.30¢; Tire Steel, 2.20¢ @ 2.30¢; Toe Calk, 2.35¢ @ 2.45¢; Spring Steel, 2.50¢ @ 2.60¢.

Tubes and Pipe.—Orders for Boiler Tubes have been fairly numerous since our last report and there is some evidence that mills are beginning to enjoy the luxury of a fairly full order book. One lot in the Cumberland Valley was taken by a local house, but at very low prices. Discount from mill is about 70 %, from stock, 65 %.

Cleveland.

CLEVELAND, OHIO, March 21, 1893

The fact that an iron firm, interested in a measure in one of the Mesabi Ranges, has purchased this week 127,000 tons of Hematite Ore, is not generally regarded by Ore dealers as an indication that the buying movement has actually begun, although certain interested people have sought to invest the transaction with that significance. The Ore, which was very low in phosphorus, is said to have been sold on the basis of \$4 ½ ton for Norrie Ore, f.o.b. cars Cleveland, Fairport and Ashtabula. To day it is said that buyers representing the Monongahela and other furnaces are here making offers for Bessemer Ore, and that a few thousand tons have been sold at \$4 ½ ton; soft Bessemer being principally in demand. There is no question about the improvement in the Bessemer Iron market being largely responsible for this sudden activity in the Ore trade. A Pittsburgh buyer, telegraphed a local firm this morning as follows: "The price for Bessemer Iron here, to-day, is really \$14 ½ ton, with quotations ranging from \$13.90 to \$14.25." Dealers give out local quotations at \$14.15 @ \$14.50, and seem to believe that the market will continue to improve. Indications are not wanting that ordinary Bessemer ores will sell as low as \$3.90 this year, but the old-established grades will probably command \$4 @ \$4.20 ½ ton, according to the quantities of phosphorus and Iron contained therein. The vessel men are keeping somewhat aloof from all the preliminary negotiations, but it is given out quite authoritatively to-day that Ore carriers are ready to close negotiations on the basis of \$1.18 from Ashland and Two Harbors for season charters. The sales of new Ore to date do not exceed, if, indeed, they equal, 50,000 tons. There is a probability, however, of some heavy sales within the next ten days. Eight out of nine of the leading dealers seen by the *Iron Age* correspondent to-day said that they had sold no Ore for 1893 delivery, but that the demand was much better, and that a considerable quantity was likely to be placed before April 1. The demands to day are from furnacemen scattered all over the country, and are almost invariably for soft

Bessemer Ores. Many dealers believe that the sales this week will aggregate 100,000 tons, and that the carrying rate will resolve itself into about these figures: Ashland and Two Harbors, \$1.15 ½ ton; Marquette, 95¢ ½ ton; Escanaba, 80¢ ½ ton. The present week promises to be one of exciting developments, and several substantial orders are likely to be placed before its close. At present, the only important sale has been made to a firm interested in the mine itself, and at figures, given out authoritatively, as equal to \$4 ½ ton for the best grades of Gogebic Bessemer.

Iron Ore.—Some little life has been infused into the market by the boom in Bessemer Iron, followed up, as it has been, by numerous inquiries of local dealers regarding this season's prices, and also in two or three cases of small sales. Past season's Ores on the docks are still being reached out after quite freely, although the supply of Bessemer still to be found unsold is small. One of the largest firms in the Perry-Payne building made an estimate of their Bessemer holdings to-day and found but 2600 tons remaining. The quantity of non-Bessemer is being steadily decreased, and at present these Ores are selling at a uniform price very close to \$3 ½ ton f.o.b. cars Cleveland, Fairport, Erie, Ashtabula, Lorain, and Buffalo. During the week just closed the call from the furnaces was for 35,000 tons of Ore, as compared with 31,000 tons for the corresponding week in 1892. The outlook is considered better than at any time since the close of navigation last year, and dealers confidently look forward to a demand necessitating an output this year of fully 9,000,000 tons. Their confidence in this regard is being strengthened by the continued improvement in the Pig Iron market, and in the indications, daily growing more manifest, that the railroad interests will be heavy buyers of Iron this year.

Pig Iron.—Bessemer Iron has shown a wonderful improvement during the past week, and, instead of the old figures, \$13.50 @ \$13.85 ½ ton, local dealers now quote \$14 @ \$14.35, and estimate that prices will go even higher before the week is closed. The demand is also increasing, and this fact is probably responsible for the number of inquiries now being received for Ore Gray Forge Irons are about holding their own, with Foundry Irons a bit stronger. The developments of the next few days will be awaited with the keenest interest.

Scrap.—Dealers give out these quotations to-day: No. 1 Railroad Wrought, \$15 ½ ton net; Cast Scrap, \$11 ½ ton net; Cast Borings, \$8 ½ ton net, and Wrought Turnings, \$10 ½ ton net.

Old Rails.—We hear of a sale of 2000 tons at \$20 ½ gross ton. The demand is fairly good.

Muck Bar.—Some improvement is noted in the demand, but prices remain quite firm at \$24.25 @ \$24.50 ½ ton Cleveland.

Old Wheels.—A sale of a small quantity of Old Wheels at \$14 ½ ton, Cleveland delivery, is reported.

Nails.—Steel Wire Nails are a bit firmer and are now quoted at \$1.50 ½ keg in stock. Cut Nails are still quoted at \$1.55 @ \$1.60 in stock.

(By Telegraph.)

The Iron Ore market seems to have opened in earnest this week, although the sales to date do not aggregate 100,000 tons. Sales are reported to-day of about 25,000 tons of Bessemer Ore; very low in Phos-

phorus at \$4 ½ ton, Cleveland. The real buying movement is expected to begin next week. So far neither the Carnegies nor the Illinois Steel Company seem to have done anything, although they are usually expected to make the initial purchases. The price for good Bessemer are, it seems, firmly fixed at \$4, f.o.b. cars, lower lake ports. The vessel owners have practically determined on a \$1.50 rate on a season charter for the head of Lake Superior, and buyers may figure on this basis for season contracts. The continued improvement in Bessemer Iron is doubtless responsible for the sudden and wholly unexpected opening of the Ore market. Local dealers to-day quote Bessemer Iron at \$14.25 @ \$14.50, and announce sales at figures better than \$14, Cleveland delivery. These initial sales of Ore are likely to precipitate an active buying movement within the next ten days. Thus far every sale has been based upon the assumption that Ore from the Norrie Mine is worth \$4 ½ ton on cars at Cleveland, Fairport and Ashtabula. Buyers representing several Eastern firms are here to-day, negotiating for this season's supply. The heavy dealers stoutly deny that the amount of Ore sold to date exceeds 200,000 tons, and of this amount 127,000 tons went to Ries & Co. of Newcastle from a mine in which this firm is interested.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, March 22, 1893.

Pig Iron.—The leading Northern furnace interest represented in this market reports that old customers are booking quite freely, and that shipments thus far this year are much heavier than they were a year since. Complaints are again being heard of delay in delivery of Southern Iron. We quote Northern brands at \$14.50 @ \$15.25 for No. 1; \$13.75 @ \$14.50 for No. 2, \$12.75 @ \$13.50 for Gray Forge, tidewater. Southern Iron, same delivery, \$14.25 @ \$14.75 for No. 1; \$13.25 @ \$13.75 for No. 2 and No. 1 Soft; \$12.25 @ \$12.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Higher freights from Liverpool have led to advanced quotations on Ferromanganese, the freight rate to Baltimore being 8/, while that to Philadelphia is 6/ ½ ton. There is very little doing in foreign Ferromanganese, which we quote nominally at \$56.50 @ \$57. Special offers on round blocks of Spiegeleisen have proved no temptation to buyers. We quote \$25.25 @ \$25.50, nominally.

Billets and Rods.—The market is very dull in Billets and in Rods. The market in Swedish material is particularly quiet and is easier. We quote Steel Billets, tidewater, \$25 @ \$25.25; foreign, \$29 @ \$29.50; Wire Rods, \$32.50 @ \$32.75; foreign Wire Rods, \$40 @ \$40.50, and Swedish Rods, \$52.50 @ \$53.

Steel Rails.—We note sales by Eastern mills of 12,000 tons. A feature in the business this year has been the selling by the large roads of Rails fit to relay, lighter Rails being replaced by heavier sections. Prices for this class of material have declined considerably lately. Girder Rails are selling at \$32.50 @ \$33. An English mill, in the Cumberland district, has sold a lot of 6000 tons, for Canada, which will be shipped via New York. We quote standard sections \$29, at mill or tidewater.

Track Material.—Business is dull. Spikes are quoted at 1.90¢ @ 1.95¢; Fish Plates at 1.55¢ @ 1.60¢; Track Bolts, square nuts, at 2.45¢ @ 2.50¢, and hexagon nuts at 2.55¢ @ 2.60¢, delivered.

Manufactured Iron and Steel.—Sellers report only a fair run of small orders, but no transactions of magnitude. Some of them express disappointment that larger contracts are not yet coming up, while others hold that no real activity can be expected until the middle of next month. We quote: Beams up to 15-inch, 2¢ @ 2.15¢; 20-inch, 2.35¢ @ 2.40¢ for round lots; Angles, 1.8¢ @ 2¢; Universal Mill Plates, 1.85¢ @ 1.90¢; Tees, 2.10¢ @ 2.30¢; Channels, 2.10¢ @ 2.20¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.80¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.25¢ @ 2.50¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock, and common 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered.

Merchant Steel.—The market continues irregular, with Machinery at 1.80¢ @ 2¢; Toe Calk, 2¢ @ 2.25¢; and Sleigh Shoe, 1.80¢ @ 1.90¢.

Old Material.—Negotiations are pending for a round block of Old Iron Rails, of exceptional quality, for delivery to Western mills, and for a moderate quantity of Old Steel Rails. We quote nominally \$16.50 @ \$17 for Old Iron Rails; \$13 @ \$13.50 for Old Steel Rails; \$15.75 @ \$16 for No. 1 Scrap, and \$12.50 @ \$13 for Old Car Wheels, f.o.b. Jersey City.

Metal Market.

Copper.—The expected spring season active demand is thus far slow to materialize. Evidence is not wanting that considerable quantities of Copper are being used for electrical purposes and that quite the average amount of stock is passing into other channels of consumption. It is a matter of record that production is being kept within manageable bounds. Still there seems to be more supply than demand at the present time and more or less weak undertone to prices, particularly for deliveries immediately after the opening of navigation. It is no difficult matter to fill orders for Lake Superior Ingot at 11½¢, and hardly any secrecy is attached to the fact that 10½¢ has only to be bid to find sellers of casting brands. In short, the market presents a weary appearance, despite all the efforts made recently with a view to regulating the relation of supply and demand, so as to prevent values from depreciating. Surface appearances are that Copper, like nearly all other merchandise, is affected to greater or lesser extent by the stringency in the money market.

Pig Tin.—The "bull" interest in the market has spared neither time nor trouble to induce consumers and distributors to believe that Tin is a good purchase at current prices. In fact, all sort of argument has been brought forward to hide the significance of present heavy supplies and large shipments from primary sources of supply during the first half of the month as an offset to the proposed duty of 4¢ per lb. prescribed in the McKinley Tariff law. The fact that future deliveries have been sold in London at a large discount while commanding more or less premium here is also treated with indifference by prominent operators. In short, all signs point to clever manipulation with a view to holding prices, so as to facilitate the unloading of speculative holdings on this side of the Atlantic. Speculative deals have been

chiefly at prices on the basis of 21¢ @ 21.10¢ for near future deliveries, and ordinary jobbing sales have in not a few instances been made at prices very close thereto. In futures the local transactions have been moderate, with latest dealings at prices closely in line with those that ruled a week ago. There were sales on Wednesday of 100 tons for May delivery at 21.05¢. April was offered at 20.95¢, but spot quotations were kept at about 21.05¢ @ 21.10¢.

Pig Lead.—Upward of 1200 tons have been sold during the past week at 3.95¢ @ 4¢, delivered, near future shipment. The purchases were chiefly by large consumers, some of whom, to all accounts, have been forced to enter the market to secure ordinary supplies. Light stocks in the West and moderate supplies elsewhere have served to stiffen the market, however, sufficiently to bring prices up to 4¢ bid for carload and larger lots for early delivery. Single carloads realized 4.05¢ on Wednesday, and that price was subsequently refused. At the close 4.10¢ was generally asked.

Spelter.—The market for Western Spelter is somewhat firmer, chiefly under the influence of higher prices for ores and preliminary movement in the direction of formation of a combination of producers. Buyers in this quarter and vicinity are not perceptibly influenced, however, and the market remains in a dull condition. For the present any price under 4.30¢ for near future shipments would appear to be exceptionally low, and for spot parcels 4.35¢ is named as a close price.

Antimony.—The market is still somewhat unsettled, but prices have undergone no decided change. Current quotations are 10¢ @ 10½¢ for Hallett's, 10½¢ @ 10½¢ for LX and 10½¢ @ 10½¢ for Cookson's.

Tin Plate.—Business has been rather slow and the market bare of really new feature. Arrivals have been quite heavy, but the greater portion went in delivery on old orders, and, in the absence of any radical change in the foreign market, prices here remain very steady. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, scarce; light weights, \$5.12½ for 100 lb, \$5 for 95 lb, \$4.90 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.85. Charcoals—Melyn grade, IC, scarce; Crosses, \$8; Allaway grade, IC, \$5.70; Crosses, \$7; Grange grade, IC, \$5.80; Crosses, \$7.10. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.30 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.70; D. R. D. grade, 14 x 20, \$5.20; do., 20 x 28, \$10.30; Dyffryn, 14 x 20, \$5.50; do., 20 x 28, scarce. Wasters—S. T. P. grade, 14 x 20, \$5; do., 20 x 28 \$9.70; Abercarne grade, 14 x 20, \$4.95; do., 20 x 28, \$9.50. Black Plates for tinning are quoted at \$3.65 @ \$3.70 for IX, and \$3.70 @ \$3.75 for IC, to arrive.

Coal Market.

The effect of the recent advance in the prices of Anthracite Coal is to excite general inquiry with reference to future supplies. Thoughts are turned in the same direction by the prospect that increased demands for transportation will follow the opening of interior navigation, and the West will naturally be on the alert to provide for future wants before the World's Fair opening, and consequent demand for cars interfere with ordinary traffic. Prices are steady, except as they may be affected by a reported cut on the part of independent companies, who are said to be scoop-

ing in more business. As a rule, however, trade is flat. Of course there is a liberal movement of Coal for consumption, when considered in the aggregate, and some operators are short of special sizes. Pea and Buckwheat are still scarce; Pea, \$2.50 @ \$2.75, and Buckwheat, \$2.50 @ \$2.15, f.o.b. Stocks at all distributing points are of moderate proportions. Week's production, 863,707 tons; total to date, 7,531,571 tons, against 7,355,090 tons last year. Reading tonnage, 410,000 tons. Reading Railroad's Bituminous tonnage, 323,882 tons; Coke, 121,997 tons. Stocks at Port Richmond and New York, 467,000 tons; at Buffalo and Chicago, 460,000 tons. Bituminous shipments are heavy, under an improving demand. Clearfield for the week, 69,882 tons; Beech Creek, 69,888 tons; Chesapeake and Ohio, 74,381 tons; Norfolk and Western, 65,422 tons. Coke shipments for the week, 120,000 tons. Prices are unchanged.

It is reported that a number of suits are about to be brought against the Delaware, Lackawanna & Western Railroad for overpaid freight charges for Coal tolls. About a year ago the Lackawanna adopted the 60% basis for purchasing Coal from individual operators, but, it is said, neglected to make a corresponding reduction in transportation rates. Individual operators who marketed their own Coal were therefore compelled to pay the maximum freight rate, which some of them did under protest.

The fire in the Honeybrook coal mine still rages and adjacent mines are threatened.

A meeting of freight agents of the railroads carrying coal from the Western Pennsylvania and Ohio mines to the lakes advanced last year's freight rate of 85¢ to lake ports to 90¢. At the same time the attempt of the Ohio interest to re-establish the old discrimination in favor of the Ohio mines was decisively negatived.

A tow comprising 11 barges loaded with 11,800 tons of coal from New York arrived safely at New London, 17th inst.—the longest single tow ever brought through Long Island Sound.

The daily output of McDowell and Mercer counties, W. Va., is 50,000 tons a day, and that region, it is predicted, "will soon lead the world as a coal-producing territory."

Financial.

The New York money market, one might suppose, from the accounts colored by Wall street speculators, is in a strained and unnatural condition entailing much hardships among the mercantile classes. A bank president, who is in close touch with merchants and traders, remarks that this is an erroneous view; that, in truth, the experience this season in regard to discounts, accommodation, &c., is much like that of other seasons when money is wanted over a wide acreage of country for moving crops. The banks are accommodating their customers about as usual, of course, looking well to their securities. Doubtless there is far more difficulty of late in disposing of paper through brokers, who are unable to command the ample facilities sometimes enjoyed. The wants of the Treasury Department and the demand for export, tend to exhaust the gold resources, but bankers generally seem to think that the bottom has been touched, so that the proposed issue of Government bonds may be long deferred, or become altogether unnecessary. Increased confidence abroad may cause a renewed demand for American securities, and exports of produce on the opening of navigation will be augmented. Still, the fact cannot be ignored that in our foreign trade there exists an adverse balance amounting to \$32,000,000, as compared with a favorable balance of

\$171,000,000 one year ago. On the other hand, the quantity both of wheat and grain available for export is extraordinary; but, unfortunately, the price of wheat is about the lowest ever known. A question of much significance at the present time relates to the probable foreign demand for these articles, even at a concession from present market quotations. To carry these commodities requires a large amount of money.

Stocks have been irregular, influenced by railroad troubles at the West, dear money, and exports concerning the coal trade. The statement that Reading had 1,100,000 tons of coal among its active assets was regarded as a menace to the coal market. Erie was especially weak on sales by foreign houses. Saturday's bank statement had little influence, it being apparent that the gain in surplus was due to a contraction in loans. On Monday business in the grangers appeared to be held in check by the pending injunction order of Judge Ricks against the engineers and firemen of the Toledo, Ann Arbor & North Michigan. Reading improved on news that the application to issue \$5,500,000 receiver's certificates had been referred to a Master to report, and the market was active and generally strong to the close, about the only exception being General Electric.

New England was in good demand because of a report that provision will be made for the floating debt.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended.....	99½
U. S. 4s, 1907, registered.....	111½
U. S. 4s, 1907, coupon.....	112½
U. S. currency 6s.....	107½

The New York banks decreased their loans \$5,471,500 last week; but as they also lost \$5,248,250 of deposits, the amount of deposits is only \$2,657,100 larger than the total amount of outstanding loans. The surplus reserve increased \$1,395,850, making the amount held in excess of reserve \$6,039,125. Money was active, loaning at an average of about 7 per cent. on call. For time contracts little money was available except that offered by foreign bankers, who demanded 6 per cent. six months. Commercial paper was almost stagnant, and the business was confined to a few out-of-town buyers. The city banks have all that they can do to accommodate their regular customers, and the amount of paper offering is large.

Sterling exchange was higher, rates advancing with easier money, and \$500,000 in gold was engaged for shipment. Exports of gold since January 1 \$32,000,000, against \$11,500,000 for the same time last year.

A break in bar silver in London to 37½d. per ounce had an unfavorable influence on the local silver market, and certificates declined to 82½.

General trade is on a conservative basis, and without speculation. Goods of the coarser description will, in many instances, be held back for the opening of navigation. Wheat, after various fluctuations, was a fraction higher at the close. In flour on Monday there was more firmness than for some time past, and exporters took hold with alacrity. Provisions are again lower.

A review of the foreign commerce of the United States for February shows an increase of over \$13,000,000 in the imports, and in spite of the large shipments of specie, a decrease of more than \$18,000,000 in the exports, making a difference in the balance of trade for a single month of nearly \$32,000,000. Last year the February exports exceeded the imports more than \$26,000,000; this year the February imports exceeded the exports, leaving out the specie from both totals, \$19,688,262, showing a change in one month of over \$40,000,000.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 22, 1898.

Operations in Scotch Pig-Iron warrants have been moderate and prices have shown very little change. Cleveland warrants, although receiving more attention, have receded somewhat in price, and Hematite warrants remain quiet, although somewhat lower. Late sales were at 40/9 for Scotch, 34/3½ for Cleveland and 45/7½ for Hematite. Sellers are rather shy of committing themselves, believing that leading London operators are quietly unloading, yet on the alert to entangle any outside operations on short account. Outside interest in the market seems to be somewhat broader. There are at present 70 Scotch furnaces in blast. Stocks in public stores include 344,000 tons Scotch and 55,000 tons Cleveland Pig.

The Pig-Tin market hardened early in the week on prompts, in sympathy with American advices, but dealings were mostly in small lots and heavy shipments from the Straits have caused free selling of futures at a considerable discount. The market is thus in somewhat peculiar condition, with American Tariff prospects and heavy visible supply of Tin more or less confusing.

Copper has been traded in quite liberally, chiefly between regular operators, but outside interest is still very tame owing to peculiar movements of influential operators who seem inclined to check any decided advance in prices despite improvement in the statistical position. There has been quite a good demand from India and the Continent. Sales of Furnace material recently include 500 tons Montana Argenterous at 9/6 and 4400 tons ditto on private terms. Smelters are now well supplied.

Charcoal, Tin Plate and ordinary Cokes have been rather quiet, but business in Oil sizes makes a good showing. Prices have undergone very little change. Stocks at shipping points aggregate 265,000 boxes, against 221,000 boxes at the corresponding period last year. Operations have been resumed at the Landore Works.

Scotch Pig Iron.—The market is very quiet and prices are somewhat irregular, but without radical change.

No. 1 Coltness, f.o.b. Glasgow.....	54/
No. 1 Summerlee, " ".....	49/
No. 1 Gartsherrie, " ".....	48/
No. 1 Langloan, " ".....	53/
No. 1 Carnbroe, " ".....	43/6
No. 1 Shotts, " at Leith.....	52/6
No. 1 Ghengarnock, " Ardrossan.....	49/
No. 1 Dalmeilington, " ".....	46/6
No. 1 Eglinton, " ".....	44/

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/8.

Cleveland Pig.—Business has been on a smaller scale, and the market is easier, with sellers at 34/6, f.o.b. shipping port, for No. 3 Middlesborough.

Bessemer Pig.—Demand is moderate and the market is rather weak, with sellers at 47/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—The market remains quiet, but prices are firmly held. English 80 % quoted at £10. 15/, f.o.b. shipping port.

Steel Rails.—Business moderate and prices without radical change. Heavy sections quoted at £4, f.o.b. shipping port.

Steel Slabs.—Market remains very quiet. Bessemer quoted at £4, f.o.b. at shipping point.

Steel Billets.—A moderate business passing at about former prices. Bessemer, 2½ x 2½ inches, quoted at £4, f.o.b. shipping point.

Steel Blooms.—Little doing and no change in sellers' prices. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old Iron Rails.—The market remains quiet and unchanged. Tees quoted at £2. 7/6 @ £2. 10/ and Double Heads at £2. 10/ @ £2. 12/6, f.o.b.

Scrap Iron.—Only small sales making and those chiefly at former prices. Heavy Wrought Iron quoted at £2, f.o.b.

Crop Ends.—Market very dull and unchanged. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured Iron.—Demand rather slow and prices still leaning in buyers' favor. We quote, f.o.b. Liverpool:

	£	s.	d.	£	s.	d.
Staff. Ordinary Marked Bars	8	0	0	@	
" Common	6	5	0	@	8 7 6	
Staff. Bl'k Sheet, singles	7	7	6	@	7 10 0	
Welsh Bars (f.o.b. Wales)	5	7	6	@	5 10 0	

Tin Plate.—Business moderately active and prices held quite firmly. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/6 @ 14/0
IC Bessemer Steel, Coke finish	12/0 @ 12/3
IC Siemens	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20	12/0 @
Charcoal Terne, Dean grade	13/6 @ 14/

Pig Tin.—Hardly any business at the close and prices very uncertain. Straits quoted at £95. 2/6 for spot. Futures wholly nominal.

Copper.—Market slow, with prices barely steady. Merchant Bars quoted at £45. 5/ spot, and £45. 12/6 three months' futures. Best selected, £49. 5/.

Lead.—The market has been quiet but steady at £9. 15/ for Soft Spanish.

Spelter.—Business moderate and prices down to £17. 5/ for ordinary Silesian.

The population of Providence, R. I., is nearly 150,000, as compared with 132,000 ten years ago.

The organization of the several committees in the United States Senate does not appear to be favorable to President Cleveland's supposed plans for a suspension of the silver-purchase law. Another event to be noted in this connection is the announcement by the English Chancellor of the Exchequer in the House of Commons last week, that the English delegates would be instructed to oppose "every bimetallic scheme" when the Monetary Congress reassembles.

Travelers by the American line to England speak in high commendation of the improved facilities offered by the new docks at Southampton, which are approached immediately without regard to the stage of water.

HARDWARE.

Condition of Trade.

THE PAST WEEK has given little change in the general condition of the Hardware market. Trade on the whole is in excellent volume, and shows a natural increase as the season advances. In a good many lines the manufacturers are fully occupied on orders, and in some are unable to turn out the goods as rapidly as called for by their customers. In the matter of prices the market is at least in as good condition as it has been for several weeks, and in some lines there are indications of improvement. Collections are not entirely satisfactory, and complaint is made of difficulty in making them in several parts of the country.

Chicago.

(By Telegraph.)

Shelf Hardware orders came in something like an avalanche last week, following a few days of comparatively pleasant spring weather. The orders now received are running considerably larger than usual, showing that merchants generally are stocking up on account of the spring demand from their customers. Heavy Hardware is moving freely, all branches feeling an improvement in the trade consequent upon a belief in the genuine advent of spring. The month of March is coming up to its usual record for heavy business. Collections are still slow, probably not more than one-half what they should be at this season.

St. Louis.

(By Telegraph.)

The month of March is keeping up the record made by January and February, so far as volume of business is concerned, and at this writing jobbers have about all they can handle. This is particularly true with reference to seasonable goods, and in the line of Wire Goods jobbers are hardly able to supply the demand. Wire Nails are strong, and have been advanced 5 cents per keg.

Barb Wire is also active at unchanged prices. The outlook for the building trade is encouraging and a large trade in Builders' Hardware is assured. Prices are well maintained in all lines and the tendency is toward slightly higher prices. The demand for agricultural implements is noteworthy on account of the rapid improvement in this direction in the past two weeks.

Collections are a trifle slow and doubtless will be until the financial clouds now overhanging the country are dispelled.

Notes on Prices.

Cut Nails.—The Cut-Nail market is represented by the quotation of \$1.20 to \$1.25 for carload lots at mill, the former figure being readily obtainable, though

the latter is quoted in some cases. The new card is used by all the mills and is regarded as quite satisfactory. There are, however, indications of a tendency on the part of manufacturers to shade quotations slightly on specifications with a high average. The figures named above are generally quoted on assortments without regard to average. Carload lots on dock are regularly quoted at \$1.40, with the usual advance for small lots from store.

Chicago, by Telegraph.—The trade in Cut-Steel Nails has felt the effect of better building weather in the steadily increasing business every day for the past week. Prices are unchanged at \$1.42½, Chicago, for mill shipment on the basis of the new card. Everything is moving smoothly under the new arrangement, and outside manufacturers appear to be standing by the schedule of prices previously published. Small lots are selling from stock at \$1.50.

Wire Nails.—The Wire-Nail market continues in a very satisfactory condition and prices are evenly maintained. Notwithstanding the advances which have taken place, manufacturers report an excellent demand and many inquiries, so that the aggregate of current business is satisfactory. The market is characterized by an even and firm tone, and it would appear that Nails required in the near future are regarded as a safe purchase at current quotations, which are on a basis of \$1 50, f.o.b. factory, Cleveland being the point of equalization for the West and Pittsburgh for the East. Small lots from store in New York are quoted at \$1.75 to \$1.80.

Chicago, by Telegraph.—Manufacturers of Wire Nails state that the demand from jobbers is now excellent for delivery during the coming three months. The situation from the manufacturers' standpoint is steadily growing better. They have been able to maintain the advanced price without a break and look forward to a higher price if the present heavy consumption continues for the length of time expected. A conservative feeling obtains, however, with regard to making advances, and no further step in that direction will be taken until every condition is seen to fully warrant it. Quotations continue at \$1.65, Chicago, for mill shipment. Jobbers report unchanged prices of \$1.70 from stock and \$1.65 for carloads.

Barb Wire.—While there has been no formal change in the quotations for Barb Wire, the market is somewhat firmer, so that \$2.45 may be regarded as the price for carload lots of Four-Point Galvanized at mill. The volume of business is excellent and manufacturers are anticipating a heavy trade during the season, the prospects for a large consumption being unusually bright. Carload lots on

dock in New York are quoted at \$2.65 to \$2.70. There has been no change in the price of small lots from store.

Chicago, by Telegraph.—Contrary to expectations the Barb-Wire manufacturers concluded not to advance prices, at the meeting which was in session last week when our report was written. The conditions, it was then believed, were then propitious for an advance in prices, but jobbers had been so generally supplied with Wire at low rates, that an advance by manufacturers would probably have confined the trade for some time to jobbers and prevent manufacturers from obtaining any advantage from it. It was, therefore, decided to postpone any change in prices until some time in the future. Meanwhile, the demand continues very heavy and large shipments are now going forward. Factory prices are reported at \$2.20 for painted and \$2.60 for galvanized. Jobbers quote small lots at \$2.25 and \$2.65 respectively.

Wrought-Iron Pipe.—The Wrought-Iron Pipe market is weak and demoralized and prices are extremely low, notwithstanding the fact that the demand is good and the volume of business large. There are at present no definite indications of an understanding being reached by the manufacturers with a view to advancing prices, but it is not thought likely that the present condition of things can be of very long duration.

Cordage.—The advance referred to in our last issue in the price of Sisal Rope has been followed by a slight advance in Manila. The strength of the market is owing to the higher prices which are ruling for the raw material. The present condition of the market is represented by the following quotations for round lots, f.o.b. factory, subject only to a discount of 1½ per cent. for cash:

	Base.
Manila.....	9¼ cents.
Sisal.....	7½ " "
New Zealand.....	6¾ " "

Trojan Horse Rasps.—The Trojan Horse Rasp, manufactured by Banker & White, Troy, N. Y., is quoted at 60 and 10 and 5 per cent. discount.

The Levin Pruner.—This article, a description of which is given in this issue, is manufactured by the Levin Pruner Company, 37 Dey street, New York. The list is as follows, subject to a discount of 40 per cent.:

	Per dozen.
No. 1, 7-inch.....	\$15.00
" 2, 9 "	21.00

Montgomery's Patent Hammer.—The Hammer put on the market by Montgomery & Horton, 107 Chambers street, New York, is described in another column. Only No. 1½, 1 pound, is at present made. It is listed at \$12 per dozen, subject to a discount of 40 and 10 per cent.

Screen-Door and Window-Screen Hardware.—The following are the list prices of the goods included in the catalogue of Screen-Door and Window-Screen Hardware which has recently been issued by Reading Hardware Company, Reading, Pa., and which is referred to in another column. The goods comprised in the following list are subject to a discount of 5 per cent.:

	Per gross.
Sash Lifts, No. 240.....	\$1.05
" " " 240 1/2.....	1.25
" " " G 241.....	2.60
" " " 1241.....	7.50
" " " 260.....	1.15
" " " 272.....	2.00
" " " 274.....	2.35
" " " 278.....	4.10
" " " 1273.....	10.00
	Per doz.
Screen Door Catches, No. 442.....	\$1.45
" " " 445.....	1.70
" " " 453.....	1.45
" " " 448.....	2.40
" " " 448 1/2.....	3.95
" " " 1447.....	6.00
" " " 1448.....	6.00
" " " 458.....	2.40
" " " 458 1/2.....	3.95
" " " 449.....	4.25
" " " 449 1/2.....	7.65
" " " 1449.....	9.75
" " " 452.....	4.00
" " " 452 1/2.....	7.15
" " " 1452.....	9.25

The following goods are sold net at the prices named:

	Per doz.
Screen Door Catches, No. 1451.....	\$10.00
" " " 1454.....	9.50
Screen Door Pulls, No. 1151.....	1.10
" " " 1152.....	1.50

New Favorite Family Scales.—These scales, which are manufactured by John Chatillon & Sons, 85, 87 and 89 Cliff street, New York, and described on another page, are sold from the following list, which is subject to a discount of 40 per cent.:

New Favorite Family Scales.

With Platforms Only.

No.	Per doz.
36, 12 pounds by 1 ounce.....	\$42.00
46, 24 " 1 ".....	52.00
56, 48 " 2 ounces.....	62.00

With Platforms and Tin Scoops.

37, 12 pounds by 1 ounce.....	\$48.00
47, 24 " 1 ".....	58.00
57, 48 " 2 ounces.....	68.00

With Tin Scoops.

38, 12 pounds by 1 ounce.....	\$46.00
48, 24 " 1 ".....	56.00
58, 48 " 2 ounces.....	66.00

Base Knobs, &c.—The following are the prices at which J. H. Sessions & Son, Bristol, Conn., are selling their patent rubber-tip Door Stops with gimlet-pointed Screws, packed 1/4 gross in a box:

<i>Birch.</i>		
Inches.....	2 1/2	3
Per gross.....	\$1.25	1.35
		1.55
<i>Walnut.</i>		
Inches.....	2 1/2	3
Per gross.....	\$1.55	1.65
		1.85
<i>Cherry, Oak and Ash.</i>		
Inches.....	2 1/2	3
Per gross.....	\$1.55	1.65
		1.85

Floor Stoves with rubber rings made from cherry or walnut are quoted at \$4 per gross.

Furniture Knobs and Trimmings, mahogany, walnut and oak, are sold from the following list, which is subject to a discount of 30 per cent:

	Per gross.
No. 8, Wood Screw.....	\$2.20
" 9, ".....	3.00
" 0, ".....	3.00
" 8, Plain, no Screw.....	2.14
" 9, ".....	2.94
" 0, ".....	2.94
" 1, Toilet Screws.....	3.50
" 7, ".....	4.75
" 7-1 1/2-inch Toilet Screws.....	4.75
" 7-2-inch ".....	5.00
" 8, Wood Screw, Maple in Wood to paint.....	2.00

Any of the above in wood or oiled, 20 cents per gross less.

Glass.—The Glass market remains practically unchanged since our report last week. Business with jobbers and importers is quiet and but a limited amount of Glass is changing hands. Manufacturers of American Glass report a good demand and that the tendency is toward further improvement in this direction. It is also stated that manufacturers do not succeed in accumulating any large stocks and that it is not probable that they will be able to do so before the season closes. It is intimated that prices will be advanced in the near future by the National Window Glass Company, and also that the United Glass Company have joined the National Company. Since the arrangement of having all orders for Plate Glass pass through the hands of a general agent went into effect, this branch of the Glass business has been in a much more satisfactory condition. Stocks are reported as considerably smaller than a year ago, with a good demand and stiffer prices than for a year past. The New York importers of Glass are still formulating a plan for regulating prices, and, while no official announcement has been made, it is understood that a forfeit, to be paid in case agreed prices are cut, will be a feature of the agreement. Quotations remain unchanged, as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17 1/2 cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount to 80 and 5 per cent. discount. American Plate ranges in price from 60 and 2 1/2 per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

Export Notes.

PRESIDENT DIAZ is very anxious to establish closer trade relations between Mexico and the Central American and South American countries. There are many valuable products raised in Mexico which could be marketed in those countries if trade relations were established, and in order to establish this proposed interchange of commodities President Diaz has sent an authorized Commissioner to Central America to bring the matter before the Government there. After fulfilling his mission in Central America the Commissioner will proceed to Brazil and other South American countries with the same object in view.

The Mexican World's Fair Commissioner is now in Mexico City superintending the shipments of exhibits from that country to Chicago, which will include several extensive industrial and State exhibits, to be forwarded at once. The Mexican Commissioner, M. Zerrano, has completed the organization of the national commission to the fair.

Representatives of Chicago capitalists are now in the City of Mexico to arrange for an extensive packing house. They hope to receive concessions from the Mexican Government. The plan contemplates establishing branch houses in leading Mexican cities. A large portion of that country's supply of live and dressed pork is now received from Chicago and Kansas City. An effort will be made to encourage the raising of hogs in Mexico.

Charles H. Dickinson.

IN THE DEATH of Charles H. Dickinson of Kalamazoo, Mich., which occurred at Kansas City, Mo., on the 14th inst., the Michigan Hardware trade has lost a very prominent member. We are indebted to the Kalamazoo Telegraph for the following information:

Mr. Dickinson's death is an unusually sad one, as it occurred at almost the beginning of a pleasure trip. February 9 Mr. and Mrs. Dickinson left this city for a trip to California. Their train was wrecked at Baring, Mo., which is 160 miles this side of Kansas City. Mr. Dickinson was one of the unfortunate ones to be injured as the result of the accident. His right leg was broken below the knee and his foot was also injured. The accident occurred in the morning, and Mr. and Mrs. Dickinson were until 11 o'clock in the evening reaching Kansas City. By the time Mr. Dickinson was conveyed to the hospital he was blue with cold, and there was no physician to attend him until some time after. He had an attack of bilious fever, but got better and became able to use crutches. A blood clot formed and pneumonia was the result. Phlebitis set in, and heart failure ended what has been a life of large commercial activity.

In the hospital in which Mr. Dickinson spent his last days, he received the best of care. His wife and son, the latter having been sent for, the Loyal Legion, the Knights Templar and friends in Kansas City did all that could have been done for the sufferer.

Mr. Dickinson was born about 1836 and was therefore in the neighborhood of 57 years of age. He was graduated from Dartmouth College and also from the Albany Law School, and though admitted to the bar, did not practice. He entered the Board of Trade battery as quartermaster and came out of the war a captain. After the late Civil War he went to South Haven, where he engaged in extensive lumber business in connection with a Hardware business. Deceased removed to this city in December, 1879, and bought out the Hardware business of J. J. Perrin at the corner of Main and Burdick streets, where the City National Bank now stands. He was a member of the Loyal Legion and a Knight Templar, also a member of the G. A. R. In politics Mr. Dickinson was a Republican.

Deceased was at one time a director in the City National Bank and was a director in the First National Bank at the time of his death.

The community has lost by the death of Mr. Dickinson a man of large business ability and one devoted to the best interests of the city.

THE Hardware Club OF NEW YORK.

THE ANNUAL MEETING of the Hardware Club of New York was held on Saturday, March 18, at 3 p.m., in the parlors of the Cosmopolitan Hotel, corner Chambers street and West Broadway. There was a goodly representation of the membership, and harmony and enthusiasm characterized the gathering. The meeting was called to order by the president, William H. Williams, who submitted a report on behalf of the Board of Governors, in which he referred to the history and plans of the club, reporting a membership of 228 resident members and 61 non-resident members. After referring to the contract recently entered into with the Postal Telegraph Cable Company for a ten years' lease of the top floor of the new building now being erected on the corner of Broadway and Murray street, the president's report continued:

It is expected that these rooms will be ready for occupancy by November 1 next. Favorable arrangements have been made with the Postal Telegraph Cable Company for putting in the permanent fixtures that will be required for the use of the club.

As announced in a former circular, the building is exceptionally well located for the convenience of the Hardware trade of New York, and in its general appointments it will have no superior in the city.

The amount which will be received from initiation fees of members will be sufficient, the board thinks, to enable it to fit up the rooms in a suitable and elegant manner, which will make the club what it was designed to be, a pleasant and useful meeting place for its members.

Next to securing permanent quarters, the principal event in the history of the club during the past year was the fifth annual dinner of the Hardware and Metal trades, celebrated under the auspices of this club at Sherry's, on the evening of February 21 last. The success of the meeting, socially, intellectually and gastronomically, amply justifies the efforts of those who had it in charge, and confirms the wisdom of having at least once each year meetings of a similar character of the trade in which we are engaged and those allied to it.

Reports were also submitted by J. L. Varick, secretary, and Thomas F. Keating, treasurer. The following nominations for Board of Governors, which had been duly made and posted by the Committee on Nominations, in accordance with the requirements of the constitution, were then reported to the meeting, and the gentlemen named were unanimously elected:

BRACE HAYDEN.
M. C. OGDEN.
CHARLES DALY.
THOMAS F. KEATING.
R. R. WILLIAMS.
J. H. KENNEDY.
R. H. SWAYZE.
E. C. VAN GLAHN.
A. G. SHERMAN.
W. R. WALKLEY.
W. H. WILLIAMS.
J. L. VARICK.
PETER MCCARTEE.
EUGENE BISSELL.
A. D. CLINCH.

It was then, on motion of William A. Graham,

Resolved, That it is the sense of this meeting that the action of the Board of Governors in leasing from the Postal Telegraph Cable Company rooms for the use of this club, as reported to this meeting by the president, meets with the approval of the members of this club.

The following resolution was then moved by A. W. Milligan and unanimously adopted:

Resolved, That it is the sense of this meeting that the treasurer of the club should call upon the members now for their initiation fees, in order that he may be in funds to meet the demands upon him as security for rent or fitting up the new rooms.

The meeting then adjourned. In accordance with the requirements of the constitution, the newly elected Board of Governors will, during the present week, assemble to be divided into three classes, holding office for one, two and three years respectively, and for the election of officers of the club.

More Letters from the Trade in Regard to the Cut-Nail Card.

IN THE LETTERS given below it will be observed that the advantages and disadvantages of the new card for Cut Nails are discussed by our correspondents from their different points of view. Among the questions touched upon is the desirability of having a card which would be so graded as to permit the question of average to be entirely disregarded by the manufacturers, and it will be seen that from the merchant's standpoint such a card would be regarded with general favor. Whether or not there are difficulties in the way of the adoption of such a card remains to be seen so far as it would affect the interests of manufacturers. The views expressed in the following letters are deserving of careful consideration, representing as they do the judgment of many leading houses:

THE TODD-DONIGAN IRON COMPANY, Louisville, Ky.—We consider the alterations that have been made in the Cut-Nail card injurious to the large buyers. The old card was a fair one, and the objection of some dealers to averages, on the score of trouble of calculating them, is, we think, a ruse to cover their real motive in desiring the change. In every large city a few houses carry the full line of sizes, while many have only the coarse or what are known as the Common Nails. Those who carry a complete assortment, including the small and fancy Nails, are entitled to the discrimination made in their favor by the system of averages, because many of the sizes are slow of sale, and the dealer should be repaid for the expense of carrying them.

It would be very inequitable if the merchant who carried only coarse Nails could buy them as low as the one who carries the unsalable sizes, and then supply himself with fancy Nails from his neighbor's stock at the low margin of profit ruling between neighboring dealers. Hence we say, the old card, with

averages, was a fair one, and we think objections to it arise, in many instances, from those who were unwilling or unable to avail themselves of its provisions, and not because of the trouble involved in the calculation of average.

While on this subject we call the attention of jobbers to and ask their disapproval of the system of explanatory circulars issued by agents, explaining the intricacies of averages to the small trade. Many who receive this information never buy so as to come under the scope of what is known as an average. The tendency of that class of literature is to make the customer dissatisfied, cause trouble to the jobber and be of no service to the agent issuing it.

Such a course is on a par with quotations issuing from similar sources on car-load lots to parties who never buy such quantities. The jobber is sure to be confronted with these quotations and asked to meet them on small shipments, which of course cannot be done.

As the mills have adopted the new card, discussion of its provisions is useless now, and we are averse to joining an educational bureau like the one above named. We are always working in the interest of our patrons, and if any of them object to buying by the new card they can work on the old, or *vice versa*, and we will take pleasure in supplying them promptly.

W. W. WOODRUFF & Co., Knoxville, Tenn.—We are heartily in favor of the new card if it will do away with the plan of considering averages in making the base price. In most all ordinary specifications we think it will work all right, but it is reasonable to assume that no Cut-Nail mill would furnish a large quantity of large-size Nails at the same base price as could be obtained with specifications calling for a high average. However, we think the Cut-Nail manufacturers have gained one advantage, and it places them on a better footing to compete with the Wire-Nail makers, both cards being the same.

A few days ago we sent an order to a mill for all 40d Wire Nails, and it was referred back to us with the statement that they could not furnish this size alone at the base price that they had been charging us. We suppose the Cut-Nail manufacturers would do the same thing, notwithstanding they claim that the new card will do away with the practice of considering averages. The trade here have adopted the new card, and we have had no complaints so far.

CARTER-MAGILL HARDWARE COMPANY, Chattanooga, Tenn.—We are fairly well pleased with the new Nail card adopted by the Cut-Nail manufacturers, inasmuch as it does away with the average business, which has been a source of a great deal of trouble to the jobbers. We trust the Cut-Nail manufacturers will stick to their determination to sell Nails without regard to a high or low average. In case they do not and go back to old methods, we think the new card will bring about more work and worry to both the jobbers and manufacturers than the old card did.

ROBERT DONAHUE, Burlington, Iowa.—If a card were adopted by the manufact-

urers on Wire and Cut Nails nearest cost of each size, I do not think there would be any disadvantage to the jobbers, as they buy and sell on the card with their advances. What disadvantage it would be to the manufacturer I cannot say. If any party would be gainer it would be the manufacturer. I fail to see wherein there could be any disadvantage to the retailers, as they usually base their selling price on the cost of the goods. To my mind, it appears Nails are always sold so near to cost on any average, both by manufacturers and dealers, jobber and retailer, that there can hardly be either loss or gain by any card adopted, excepting in a change of card, and the card being the nearest to differences in cost of manufacture to the base price for the various sizes would be the better one, and one less likely to be changed.

GEORGE BROWN, Knoxville, Tenn.—In our opinion, it would be very easy for the manufacturers of the Cut and Wire Nails, if they would get together, to produce a properly graded card, upon which Nails of any size could be purchased at a given base price without regard to average. We do not see how such a card could act to the disadvantage of either jobber or retailer. Under the present card we think it will be impossible to disregard the question of average. Already the manufacturers say that your order must be fairly assorted, and that they will not sell a carload of the larger sizes at the same price they will sell a fair assortment. While on this subject we would like to make a suggestion as to a Nail card, which has always seemed to us as the only fair way to make a card. As the custom is at present, we are forced to sell a keg of 3d Fine Nails at the same profit that we do a keg of 60d Nails, though the costs differ widely. We think that the Nail card should be based upon the same idea that the Bar Iron card is, viz., that the extras be too high, and that they be cut by the manufacturers to the jobber and large retailer, who in turn do not cut them, which leaves them the same percentage of profit on all sizes. We do not know if such a card has ever been considered. We have never called the attention of any manufacturer to it; but it has always seemed to us as both feasible and desirable.

CLARK, QUIEN & MORSE, Peoria, Ill.—As regards profits on Cut Nails to be made by jobber or retailer, a card properly graded for the different sizes would not, in our judgment, be a disadvantage, as both jobbers and retailers now sell their Nails from a base price, and charge only such advance on the different sizes as appears on the schedule by which they buy the Nails. We cannot, of course, speak for the manufacturers, in favoring such a card, but we are sure that they will eventually come to it as the only means by which the Tack makers and others who sell only the small sizes of Nails can be brought to time.

TOWERS HARDWARE COMPANY, Birmingham, Ala.—We are very much pleased with the new Nail card, and think it will correct many evils caused by the old system of buying Nails at prices governed by the average above a certain

base. Under the old system, the retail Hardware concerns who sell largely to builders could buy such high averages that they could always knock the jobbers out.

JANNEY, SEMPLE & Co., Minneapolis, Minn.—From the jobber's standpoint it would appear that the card which will allow of some shading of the price on account of the high average is the one best suited to his purposes in buying Nails. In some respects it works to a disadvantage, but as a whole we would prefer a card with high averages to one with a fixed base without any chance for deviation. It is possible we may be mistaken in this idea, but from the experience of the last few years are inclined to believe that a larger margin is made to us on account of the character of the Cut Nail cards than the fixed advance used by the Wire Nail manufacturers.

A. TREDWAY & SONS' HARDWARE COMPANY, Dubuque, Iowa.—Such a card would be more than eagerly welcomed by both jobber and retailer. However, the widely differing methods of manufacture existing between Wire and Cut Nail mills might, as it appears to us, render such a card a practical impossibility unless the corresponding sizes of both varieties actually cost to produce or can be sold at equal advances above base without that disparity existing which would tend to invite the manufacturer to either cut his base price for orders for certain sizes or to insist upon a certain average of specifications. The fact that a card not requiring a certain average of base, and applicable to either Wire or Cut Nails, would so simplify this heretofore complicated matter would make more plain to all the relative cost of all sizes of Nails simply by a knowledge of the base cost of each.

The requirement by the mills, in making a quotation of price, that specifications shall reach a certain average above base is usually a somewhat disastrous one to the jobber, as he can scarcely require from his customer the same averages; and the jobber is also very likely to over buy on the smaller sizes, to reach a high average on his purchases, while his sales may run to base sizes, and thus leave him in a position where he is compelled to buy Nails upon which he cannot make a high average.

A card which would meet all these conflicting requirements would be a much desired improvement in our view of it, and greatly simplify the whole business.

R. D. CONE COMPANY, Winona, Minn.—We can see no possible disadvantage in a Steel-Nail card on which Nails of any size can be purchased at a given base price without regard to average.

SICKELS, PRESTON & NUTTING COMPANY, Davenport, Iowa.—We are pleased with the adoption of the Cut-Nail card, making it uniform with the Wire-Nail card. We hope that this will do away with the odious idea of average.

STAUFFER, ESHLEMAN & Co., New Orleans.—We think the new Nail card is generally acceptable to Hardwaremen here. It has been adopted, and we have heard of no objections.

After Mexican Trade.

THIRD ARTICLE.

By WM. H. MAHER, TOLEDO, OHIO.

San Luis Potosi.

FROM Monterey to San Luis Potosi is a ride of about 12 hours, the most of it through a dry, barren, cactus-covered country. Wherever water is, for irrigation, there is a green field and a hacienda. An occasional flock of goats or a small herd of mules is seen along the way, but the effect as a whole is one of desolation until one reaches the latter third of the ride.

Have you ever traveled on a narrow-gauge railroad? Have you ever spent a night in a sleeping car on such a road? If not, you have an entirely new experience awaiting you, and if Fortune decides that you shall occupy an upper berth, your experience will be more varied if not more pleasing. The cars are so narrow that space is saved in the berths and also in the aisle between the berths. They are proportionately low, and the poor fellow on the upper shelf has a fellow-feeling for a sardine, he feels so "cribbed, cabined and confined."

We had these cars from Laredo to the City of Mexico, spending three nights in them, and we probably never dressed and undressed in closer quarters before in all our travels.

The average business man will be interested in knowing that the ties and telegraph poles used here come from the United States—Georgia, Alabama and Louisiana. The telegraph poles are not the tall, round tree we are accustomed to seeing in the North, but are square timbers about the size of a 6 x 6 scantling, and much shorter than the Northern pole. All railroads in Mexico were assisted by subsidies from the national Government. The Mexican National, I was informed, received \$15,000 per mile, but this, and all other Mexican railroads, become the property of the Republic in ninety-nine years.

We stopped at Bocas to visit a beautiful hacienda, said to have been the summer residence of the Emperor Maximilian, who had so short and ill-fated a reign; but while the others were visiting the oriental-looking palace I found my way to an agricultural warehouse, where I saw a Buffalo Pitts Thresher, McCormick and Osborne Binders and Reapers, and Chieftain Hay Rakes. A Mexican workman was making a new web for a Thresher, and was doing the work very skillfully, too.

Here, February 4, we saw peach trees in blossom, and in moving about we found the noon-day sun oppressively hot. The natives gathered around us, offering fruit and cakes for sale, and a dirty, forbidding looking set of human beings they were. If one is to discuss the markets of a foreign country it is needful that the purchasing capacity of the people be considered, and for this reason even trade notes must refer to the appearance of the people. Those that faced us at Bocas were bare-headed, bare-footed, short, stunted figures; scantily clothed, and looking as if they had never made the acquaintance of a good square meal even of corn.

When we reached San Luis (as they speak of it here) we found the Governor's band at the station welcoming us with "Yankee Doodle," "Columbia," "Dixie," &c. The Governor's private secretary was also there to greet us, and the way was made easy for us to reach the best business houses, and under the approval of those in authority.

If I seem to linger over the details of what was done for us by the various Governors, I do it not for the purpose of showing my readers what a good time we had, for they are not interested in that in the smallest degree, but to show the interest taken by the leading men in the efforts now being made to build up closer business relations between the two countries. And I doubt if there is any country where the approval of the higher powers counts for more, in every business transaction, than in Mexico. The favors given us were not to us as individuals, but as representative American manufacturers seeking for closer business ties with Mexico.

We found that business in San Luis was suffering greatly from a prolonged drouth, no rain having fallen there in three and a half years. What this would mean in a Northern city you can easily conjecture, but in this hot country, with its 65,000 inhabitants, it means sickness, death and stagnation in all business. Water is brought from the mountains, and a stream of people carrying home the precious fluid is passing from the public fountain all day long, while at the open ditches through which the water flows are men, women and children dipping up water into their cans, pails and jars, and then hurrying off with it.

In the leading Hardware store, owned by German gentlemen, I found a fair proportion of American goods. Sargent & Co., and the Russell & Erwin Mfg. Company were numerous represented on the shelves. The Shovels and Spades in stock were of Philadelphia manufacture. I saw Enterprise Meat Choppers, Roy & Co.'s Butts and Hinges, Rochester Bridles, German Files, Union Metallic Cartridge Company's Club Paper Shells, Stanley Rule & Level Company's Planes, Hick's Gun Caps, Vermont Clothes Pins and Howe's Scales.

The Bolts in stock were made by Wm. H. Haskell Company, Pawtucket, R. I.; Brass Lamps were from Meriden, Conn., Lamp Chimneys were from Wheeling and Pittsburgh and Henry Diston's Saws were side by side with cheap German Saws.

In talking with one dealer he said American goods were given the preference here when it could be done; that goods were ordered direct from New York, Philadelphia, Chicago, St. Louis and New Orleans. The familiar names of Hibbard, Spencer, Bartlett & Co. of Chicago and of the Simmons Hardware Company of St. Louis were frequently mentioned, and these houses are as well known here as in the States.

But San Luis is by no means so good a point for business as is Monterey. The latter city is supposed, by reason of its nearness to the States, to have advantages in price, and the smaller trade look to Monterey for supplies, while San Luis has but a local traffic.

In Agricultural Tools I learned this: One firm in Monterey has sold over 6000 American Plows in Northern Mexico. By far the largest share of these were from B. F. Avery & Son of Louisville, Ky., but among the balance were Plows from Deere, Mansur & Co., the Oliver Chilled Plow Company, and the Chattanooga Plow Company. The Southern manufacturers make a cheap Plow for Mexican trade; possibly there is also a market for it in the Southern States. I was told that the Avery Plow cost \$2.18 at the factory.

Here, in San Luis, the Avery Plow has the lead, but some Oliver Plows are also sold.

In Pumps, I found the Gould had a foothold, but by far the larger proportion of these sold were of German manufacture, and, if cheaper, were decidedly inferior to the American. One of the keenest men in our party was Mr. Myers, the Pump manufacturer of Ashland, Ohio, and it did not take him long to convince the dealer that Ohio, and not Germany, was the proper place to look for Pumps; he came away with an order, as he did in Monterey.

Our Mirror man canvassed his trade thoroughly, but discovered that his wares were too good for this market—that is, were too heavy. The duties on merchandise in Mexico are largely on the gross weight of the goods and case. The German manufacturer makes a light-weight Mirror for this country and has all the trade. Mr. Conroy said the breakage must be large in shipping such light-weight goods, and they admitted that there would be less with his goods, but the breakage was not sure and the duty was.

A fair array of American patent medicines was seen in the drug stores, and the Northern druggist may gauge prices by that charged for Ayer's Sarsaparilla, which retails at \$2 per bottle and wholesale at \$18 per dozen.

San Luis is erecting an elegant opera house, to cost over \$300,000. The iron work (and it is largely iron) is made in St. Louis, which city also has the contract for the curtains and stage accessories.

We visited the smelter, a few miles out of the city. It is the best arranged and built smelter that we saw in Mexico; has 12 furnaces, and must turn out a large product daily. I noticed that the ore crushers were the Dodge of Chicago; the Reedy elevators were in use there, and the plant, as a whole, was of Chicago manufacture. The product of the works, Lead and Silver, is shipped to Newark, N. J.

It is safe to say that the kindly feeling shown by all classes of business men to American goods is largely due to the fact that the Governor is well disposed toward us, and a word as to him may not be out of place, even in a business article.

The Governor is Gen. Carlos Diez Gutierrez. He bears a striking likeness to the pictures of Napoleon III. He has a commanding presence, a business manner, and one would say was, by nature, prompt and affable. He met us most graciously, commended our judgment in making a personal visit to the sister republic to study business conditions, as-

sured us of his friendly feeling toward American manufacturers, of his desire to see the trade between the two countries expand, and his willingness to do anything in his power to help us among his people.

He proved all this by his works, and the recollection left on my mind was of a man of liberal views, shrewd, energetic business qualities, and large administrative skill and power. He made our party his devoted admirers and friends.

But we turned our faces southward for further knowledge of Mexican trade.

The Cut-Nail Card.

THE FOLLOWING LETTER from a well-known Cut-Nail manufacturer will be of interest as referring to the relations of Cut Nails and Wire Nails as they are affected by the recent action of the Cut-Nail makers in adopting the Wire-Nail card:

To the Editor: It is a little remarkable that no one has explained the real cause for the adoption of the Wire-Nail card by the Cut-Nail manufacturers, in all the criticisms, favorable and otherwise, in your columns.

It was adopted simply in order to flank a brilliant move of the Wire-Nail manufacturers. The latter gentlemen have but a very limited trade in Nails larger than 10d. To make a low price for the large Nails would cost them little, since they sold few of them.

To the Cut-Nail manufacturers, on the other hand, the price of the large Nails is important, for these Nails are largely used, by preference, over Wire Nails in heavy work requiring strength and powerful cohesion.

The Wire-Nail manufacturers made a low price for 60d Nails, for which they had little demand, and they advanced the price 50 cents per keg on 10d, and correspondingly on all the smaller sizes. They could thus quote a low base price for use in market reports, and yet get good prices for their average assortment. The Cut-Nail makers charge but 20 cents per keg extra for their 10d. If they made a low base price for 60d, their 10d also would sell below cost. Consequently they were at a disadvantage. The market quotations being for base size only, brought trade to the Wire-Nail manufacturers. In adopting the Wire-Nail card, for Nails sold in fair assortment, and in charging 10d price for all large Nails when sold alone, the Cut-Nail manufacturers have met the situation. The base prices now quoted fairly represent the actual difference to the purchasers of assorted Nails between Wire Nails and Cut Nails. The latter are cheaper by 25 cents per keg, and the market reports show it, as they should.

To charge 50 cents per keg more for 10d than for 60d is, of course, ridiculous, and every manufacturer of Cut Nails or Wire Nails freely admits it. To make 60d Nails at the quoted prices is an impossibility.

The Wire-Nail card (exactly imitated by the Cut-Nail card) is an absurdity, and no manufacturer pretends to defend it upon its merits.

But it is the Wire-Nail manufacturers that are responsible for this card. They introduced it, and if they will change it their action will be quickly followed by the Cut Nail manufacturers. So long as they retain it the Cut-Nail manufacturers will do the same.

If, therefore, any Hardwaremen are dissatisfied with it, it is to the Wire Nail manufacturers that they must address their complaints and criticisms.

CUT-NAIL MANUFACTURER.

The Mexican Tariff.

WE GIVE BELOW extracts from the decree published by the President of our neighbor Republic on February 22 last, changing and making additions to the tariff of import duties now in force. The new as well as the present duties are given on articles relating to the Hardware trade. The new rates of duty go into effect on April 15 next:

Article.	Present duty. Per kg. gross.	New. Per kg. gross.
Glue.....	\$0.10	\$0.05
Belting, of all kinds, when imported together with the machinery to which it pertains.	Free.	.01
Candles (Stearic and Tallow).....	.20	.18
Rope (Sisal, Hemp, &c., but not Cotton) when over 3 cm. in diameter.....	Free.	.02
Sacks (Jute and Hemp, for grain, &c.)	Free.	.01½
Zinc (Pig).....	.05	.01
Emery (grain and powder).....	Free.	.01

Besides the above, a number of articles not Hardware, but intimately connected with it in mining sections, such as acids and other chemicals used in milling ores, will pay duty after April 15, having been heretofore free. On some duties have increased, on others decreased.

Referring to the condition of things in Mexico, especially as related to the tariff, a correspondent in that country writes:

The Hon. Matias Romero, Minister to the United States and Secretary of the Treasury at the same time, has gone to Washington and resumed his duties there. As an opposition daily here recently expressed it: "The great man who came to save the treasury has gone, and, left behind as the results of his efforts, is a tariff wall higher than ever before and a depleted treasury!"

It may not be so bad as all that, but it is my personal opinion that with higher tariff and lower price of silver, the prospects for this country, as a whole, are not very bright. Prices of imported goods (and that means almost everything) are continually rising as a natural result of high rates of exchange, and the principal product of the country, silver, remains low in price. The good effects of this combination of circumstances are hard to see.

Even employees in business houses here are beginning to be dissatisfied, at least such of them as send their savings to the States and see the big silver dollar dwindle to sixty and odd cents.

THE PARTNERSHIP heretofore existing between E. J. Troxel and P. A. Martin in the Hardware business at Minonk, Ill., has been dissolved. Mr. Troxel has retired and Mr. Martin will hereafter carry on the business alone.

The Massachusetts Hardware Dealers' Association.

THE HARDWARE DEALERS of Massachusetts have lately formed an association, to be called the Massachusetts Hardware Dealers' Association, having for its objects the establishment of a more general feeling of confidence, to facilitate the interchange of views regarding matters of mutual interest, and for the uplifting of trade in its entirety. The name chosen would indicate that this is a distinctly Massachusetts institution, but any responsible Hardware dealer in New England is eligible to membership, and we are advised that representative Hardwaremen in other States besides Massachusetts are actively identified with and interested in the organization.

The history of the movement, the character and spirit of the association, and what has been accomplished in the way of organization, &c., are matters which are fully covered by the following official circular:

MASSACHUSETTS HARDWARE DEALERS' ASSOCIATION.
BOSTON, March 17, 1893.

DEAR SIR.—On the 4th inst. a call was issued by certain Hardware dealers in Boston for a meeting to consider the question of forming an association for social and business purposes. The meeting was held on the 8th at the United States Hotel, Boston, and was attended by many representative men in the business, both in Boston and from the surrounding cities and towns. At that meeting it was the general expression of opinion that such an association would be of incalculable benefit to the trade, and a committee was appointed to draw up a constitution and by-laws and report at the same place a week later.

Notice of the second meeting was sent throughout the State, and we presume has been received by you. In response to this second call, 31 gentlemen, representing the trade in Boston, New Bedford, Lowell, Holyoke, Gloucester and quite a number of other cities and towns, met at the place named and decided to perfect an organization to be known as the Massachusetts Hardware Dealers' Association. Officers were elected, consisting of a president, three vice-presidents, secretary, treasurer and seven directors, and this board constitutes the Executive Committee of the association.

The gentlemen elected to these positions are:

President,
HIRAM G. JANVRIN of Boston.
1st Vice-President,
CHARLES P. DARLING of Boston.
2d Vice-President,
S. H. THOMPSON of Lowell.
3d Vice-President,
SAMUEL TRASK of Peabody.
Secretary,
JAMES A. FARLESS of Boston.
Treasurer,
D. F. BARBER of Boston.

Directors.

JAMES W. VINAL of Boston.
ANTHONY S. MORSE of Boston.
C. E. CHAMBERLAIN of Boston.
J. B. ROBINSON of Lawrence.
N. P. HAYES of New Bedford.
A. J. OSBORN of Holyoke.
JOHN C. HOLDEN of Hudson.

Every member present was thoroughly in sympathy with this movement, feeling that such an association had been long needed and would prove of great assistance in the consideration of matters of importance to the trade, and also as a promoter of confidence and good feeling. By vote, every gentleman present at that meeting became a member of the association.

It was decided to hold meetings on the second Wednesday of each month, excepting the months of July, August and January, and at such meetings the members are to dine together. Feeling as we do that this association will be of value to the trade in many ways, and that the more general its acceptance by them the better it will be for all, we cordially invite you to join with us in our efforts toward making this movement a success.

Inclosed please find copy of constitution and by-laws of the association, also blank application for admission to membership. If these have your approval, please fill out the application and return to the secretary.

Yours respectfully,
HIRAM G. JANVRIN, President.
JAMES A. FARLESS, Secretary,
103 Milk street, Boston.

Reading Hardware Company's Supplement, No. 3.

READING HARDWARE COMPANY, Reading, Pa., and 81 Reade street, New York, have just published supplement No. 3 to their 1891 catalogue. It is dated March, 1893, and comprises 96 pages. It is handsomely printed on heavy calendered paper with the cover in two colors, and contains illustrations and descriptions of their Americus and La Grande designs, Ribbon and Colonial patterns in fine Bronze Hardware, together with many additions to their line of Vassar Cylinder Locks. A number of pages are devoted to a variety of new goods, principally in plain bronze. The new patented device of a self-adjusting connecting spindle applied to Vassar Night Latches and Rim Dead Locks is also shown. The manufacturers claim for this improvement that it facilitates the work of putting these Locks on the doors, a feature which is of advantage and much appreciated by the trade. The pages are 9¼ x 12¼, giving an opportunity to show the elaborate designs in combined roses and escutcheons to good advantage. Corresponding designs are shown in Letter-Box Plates, Sash Lifts, Drawer Pulls, Cupboard Catches and Turns, Drawer Handles, &c. The company also issue a separate pamphlet relating to Screen-Door and Window-Screen Hardware. Illustrations are given of Sash Lifts, Screen-Door Catches, Screen-Door Pulls, Wire Gate Hooks and Eyes, &c. These goods are shown in a variety of patterns, and are referred to by the makers as well

made, nicely finished and superior in every respect. Reference is made to the prices of this line in another column.

Trade Items.

CHARLES P. OSGOOD AND JOHN S. HOWELL, for many years with Carolan & Company, San Francisco, Cal., who retired from business January 1, have formed a partnership for the purpose of representing Eastern manufacturers on the Pacific Coast with offices at 132 Market street, rooms 9 and 10, San Francisco. Both gentlemen are well and favorably known on the Pacific Coast, and their long experience has given them many friends who wish them success in their new enterprise. Mr. Osgood has been East making connection with some of the leading manufacturers and visiting his home in Massachusetts. He will return to California about April 1. Arrangements have been made by the firm to represent on the Pacific Coast the following among other well known manufacturers: Hoyt Metal Company, St. Louis; Peerless Mfg. Company, Cleveland; Cleveland Foundry Company, Cleveland; Nicholson File Company, Providence, R. I.; Lamson & Goodnow Mfg. Company, Shelburne Falls, Mass., and Livingston Horse Nail Company, New York.

ILLINOIS PURE ALUMINUM COMPANY, Lemont, Ill., are now preparing to make a Pan of any size to displace copper Pans used in large kitchens of hotels, steamers and restaurants. They are making a Pan for hotel use, $9\frac{1}{4}$ inches in diameter, and 11 inches deep inside, which, it is stated, weighs $4\frac{1}{4}$ pounds in aluminum, in comparison with a copper Pan of similar capacity weighing $14\frac{1}{2}$ pounds. The point is made that the price, taking into consideration the constant retinning requisite for the copper utensil, makes the cost in favor of aluminum.

F. C. COPELAND, Worcester, Mass., has recently made an improvement in Leather-Capped Chisel Handles. It consists in forcing the leather on to a tenon, so corrugated that it allows the leather to be easily forced on, but which is referred to as making it impossible to remove it. The leather cap is made from selected sole leather, which is thoroughly glued on to the tenon.

REYNOLDSON & METCALF, Primghar, Iowa, having outgrown their store accommodations, have erected a new two-story structure 43 x 123 feet of brick, with the lower rooms finished throughout with hard pine and metal ceiling. The Hardware department is 23 x 60 feet; in the rear of which is a Tin shop, 15 x 30 feet. The Harness and Miscellaneous department is 23 x 60, with a Harness shop in the rear 15 x 15 feet. An implement sample room, 36 x 40, completes the lower story. The second floor is occupied as a carriage repository, in one room, 43 x 123 feet, reached by an elevator, 8 x 10 feet, upon which vehicles can be taken up and down.

THE ANSONIA ELECTRIC COMPANY, Randolph street and Michigan avenue, Chicago, have organized, in connection with the exposition, a separate department or World's Fair Bureau; and it will be their pleasure to hear from their friends, and to render them any possible assistance either before or during their visit to the Fair. The department will be in charge of Hon. Geo. B. Shaw, recently elected to congress, and who is well known in electrical circles through his former connection with the National Electric Manufacturing Company, as their general manager.

E. LOTHAR SCHMITZ, 92 Reade street, New York, is distributing to customers handling his Fox Safety Razor and Stropping Machine an attractive display card with hanger, 7 x 15 inches in size, with beveled gold edges. It shows the outfit, including the horse-hide strop and method of using the stropping machine. The lettering is in gold on a white ground,

while the implements are in silver, black, &c., to correspond with the goods and actual size.

R. H. DANA COMPANY, 15-25 Whitehall street, New York, exporters and importers, have been constituted the sole agents for the United States for the sale of the Ivel Cycles, manufactured by the Ivel Cycle Company, Biggleswade, England, and are carrying a line of 200 to 300 machines in stock. There are four styles—Scorcher, 30 pounds; Ladies' Safety, 35 pounds; Full Roadster, 39 pounds; and Racer, 23 pounds. The American representatives carry a full stock of repairs, so there need be no delay or inconvenience in getting parts, and offer very liberal discounts to agents introducing this wheel during the ensuing year. They refer to this article as one of the leading English makes.

I. H. AMOS, Portland, Ore., who is now devoting his attention to representing Eastern manufacturers in Montana, Idaho, Oregon, Washington and California, with office in the West Block Rooms, 52-55, in that city, has recently completed arrangements to represent the following additional manufacturers on the Coast: Walter Coleman & Sons, Providence, R. I.; Niagara Stamping & Tool Company, Buffalo, N. Y.; Heinz & Munschauer, Buffalo, N. Y.; Cleveland Stamping & Tool Company, Cleveland, Ohio; E. W. Walker & Co., Goshen, Ind.; F. B. Fox Register Mfg. Company, Cleveland, Ohio; Consolidated Brush Company, Chicago, and North Wayne Tool Company, Hallowell, Me. Mr. Amos has associated with him Lewis J. Burgess, formerly with Lockwood-Taylor Hardware Company of Cleveland, and later with Foster & Robertson of Portland, Ore. Mr. Burgess is referred to as a gentleman of much business ability and an excellent salesman.

THE W. SCHOLLHORN COMPANY, New Haven, Conn., New York office, Julius Berbecker & Co., 65 Duane street, have brought out a line of the Bernard Compound Pliers and Plier and Cutter combined, for jewelers' use. They are identical in principle with those already illustrated in our columns, but have been modified in proportions and finish to adapt them to a finer class of work. The material is crucible Steel throughout, somewhat lighter in weight than the regular goods, and the handles are beaded similar to surgical and dental instruments, thus affording a good grip, and the whole tool polished and nicked. The point is made that the jaws are always parallel whether open or shut, insuring a firm hold. The Flat Nose Plier is made in four sizes, viz.: $3\frac{1}{2}$, 4, $4\frac{1}{2}$ and 5 inch. The Round Nose is $4\frac{1}{2}$ inch and the Cutting Plier is 5 inch.

HAYDOCK & BISSELL, 12 Murray street and 15 Park Place, New York, among the special notices in this issue, call attention to a sale of several thousand dozens of Table Knives and Forks, Butcher Knives, Carvers, &c., and a large line of fine Cast Steel, Nickel Plated Scissors and Shears, Silver Plated Tea and Table Spoons, Cake, Pie and Fish Knives and Forks, &c. They will also offer for sale a large assortment of first quality Pocket Knives and first quality Cast Steel Nickel Plated Scissors and Shears, Razor Strops, &c. Wednesday and Thursday, March 29 and 30, are the days on which the sale is announced to take place.

FROM THE INWARD manifest of the steamer "Naronic," Liverpool, February 11, hence to New York, now believed to have foundered at sea, we note the following: 259 bundles Coiled Rods, 20 casks Steel Strips to Brown Bros. & Co.; 98 Bars and 167 bundles of Iron, 40 boxes Tin Plates, 15 packages Hardware and 3 cases Machinery to James E. Ward & Co. in transit; 421 bundles Sheet Iron, 220 boxes Tin Taggers, 1940 boxes Tin T. B. Coddington & Co.; 1 cask Hardware to George Borgfeldt & Co.; 16 casks Iron Forgings to H. Maitland & Co.; 162 Anvils to Wiebusch & Hilger; 1 crate Cycles,

5 cases Cycle Parts to R. F. Downing & Co.; 90 crates Wheels and Frames to Premier Cycle Company; 1 case Machine W. C. Oastler; 12 casks Ironware W. B. Fox & Bro.; 150 boxes Window Glass Hormann, Schutte & Co.; 12 boxes and 50 cases Glass Heroy & Marrener; 54 boxes and 5 cases Window Glass Holbrook Bros.; 1 case Fish Hooks, 1 case Gun Stock Thomas Irwin & Sons.

SQUIRES HARDWARE COMPANY, Pittsburgh, Pa., announce that on March 10 their building and stock were seriously damaged by fire, which, however, was confined to their ware rooms and stock rooms, the store room suffering only by water. The insurance will nearly equal the loss. The company have temporarily taken quarters at 5915 Penn avenue, where they will remain for about four months, and at the end of which time they will return to the old stand and take possession of the new building now in course of erection.

WE UNDERSTAND a decision of the suit for infringement of Waffle Iron patent brought by the Griswold Mfg. Company, against J. B. Harker & Co. and others, will be decided early in April by the United States Court at Minneapolis. The decision will be awaited with interest.

GEO. N. PIERCE & Co., Buffalo, N. Y., manufacturers of Refrigerators, Bicycles, Tricycles and Bird Cages, have opened a New York office at 23 Warren street, where a stock of the goods will be carried.

HORTON, GILMORE, McWILLIAMS & Co., 172 to 176 Lake street, Chicago, are sending out a catalogue of Fishing Tackle and Baseball Goods. Catalogue comprises 16 large pages of Reels, Hooks, Trolling Baits, Soft Rubber Insects, Trout Flies, Rubber Baits, Lines, Floats, Sinkers, Stringers, Guides, Rods, Baseball Bats, Catchers' Mitts, Masks, &c.

BANKER & WHITE, Troy, N. Y., in their advertisement in this issue call attention to their Trojan Horse Rasp. A reference to the prices of this article is made under the heading of "Notes on Prices."

ALLERTON, CLARK COMPANY, Chicago, and 83 Reade street, New York, have just been appointed the sole agents for the sale of goods made by the Norwich Lock Mfg. Company of Roanoke, Virginia, for the following territory, viz.: New England States, New York, New Jersey, Ohio, Indiana, Minnesota, Illinois, Michigan and Wisconsin. The trade in New England, New Jersey, New York and Ohio will be looked after from their New York office, while the rest of it will be attended to from Chicago. It is proposed to carry a full line of these goods in New York from which the trade can be supplied. It may be said that the Norwich Lock Company is now in a position to execute orders promptly, having fully recovered from the confusion incidental to re-establishing their plant at Roanoke some months ago.

L. A. SAYRE, Newark, N. J., announces under date March 17, that he has purchased from the receiver of the Speedling Mfg. Company all the stock, machinery, tools, &c., of that concern, and is prepared to fill orders on goods heretofore made by them.

THE SYRACUSE SPECIALTY MFG. COMPANY, Syracuse, N. Y., for whom Surplus, Dunn & Alder, 97 Chambers street, New York, are agents, in their advertisement in this issue illustrate their line of Star Lawn Rakes, a description of which was given in a recent issue.

THE MACKINAW REFRIGERATOR COMPANY, New York office, 106 Chambers street, in issuing an illustrated pamphlet of these goods, direct attention especially to some of the more recent additions to the line which are referred to as meeting with considerable favor, being made in very tall or very broad patterns for special uses, among them being Nos. 197, 199, 275, 4120 and 1000. We are advised the trade in this make of Refrigerators has doubled

lately. The goods for some time past have been quoted net from this office, and the results are alluded to as very satisfactory, a departure having been made in the method of doing this expeditiously, resulting in the preparation of a special circular, which leaves but little to add in sending prices on application, a copy of which is kept with little labor.

Reports from the Trade.

WE ARE INDEBTED to W. W. Woodruff & Co., Knoxville, Tenn., for the following advices in regard to the condition of things in that city:

This month so far has been satisfactory in the Hardware trade. There has been a good demand for most all kinds of Shelf and Heavy Hardware, and especially spring goods, such as Hames, Chains, Handled Hoes, Steel Plows, Plow Stocks, &c.

Barbed Wire has been in active demand at advanced prices. This will also apply to Wire Nails, which are fast superseding the Cut Nails in this section. On the whole, we consider the outlook much better than for two years past, and with small stocks in the hands of country merchants the increased demand for Hardware will be immediately felt by the jobber.

The following review of the condition of the market in Hardware and related lines at Louisville, Ky., is from a special correspondent:

Dealers are beginning to find out that they had not laid plans for such a big volume of trade; they did not expect such a rush of orders. Their increased storing capacities were considered sufficient, but they are loudly calling on reserves at the mills—calling for old options that had been discarded, and in many cases are glad to pay 15¢ per hundred advance on several lines in order, as they contend, to get prompt shipment; others are candid in saying they have no reserves, but think present advances will only hold for about two weeks, and then the factories will be begging them to buy again at old prices. If the Barb-Wire men and Wire-Nail mills had only been possessed of backbone 60 days ago and stocked up their warehouses full, if necessary, they could to-day be reaping a small harvest. As it is, they are enjoying a very busy season and can't get cars fast enough to get off goods. The railroads in all directions are doing a heavy business and evidently making money, which they are husbanding for their dividends. They are getting into such condition that when they do determine on new stretches of roads they will have no trouble in getting all the money they want.

Bar Iron continues just about equal to demand; the mills have all they can do, and yet prices remain low enough. Corrugated and other Roofing Iron will evidently have a big sale this year. This class of building is getting more popular than ever. Last year Slate was very largely used in the larger cities, but the low prices of domestic Tin Plate will cause this roofing to be used more this season; the home article is coming into use very fast. Cut Nails are gradually fading away, and are held firmly at \$1.25 new

card at mills. Wire Nails are firmly held at \$1.50 at mills, \$1.60 delivered here, and some buying is going on. Barb Wire has advanced to \$2.60 here from factory. There are promises of further advances during the next 30 days.

Southern Hardware Jobbers' Association.

THE THIRD ANNUAL MEETING of this association will be held in Atlanta, Ga., on Tuesday, April 25. Referring to this meeting and the work of the association in general the secretary, W. P. Smith, has issued a circular letter from which we make the following extracts:

It is unnecessary for us to dwell upon the amount of good which has been accomplished by the association since it came into existence, and also the advantages derived from attending the annual meetings—particularly to the members who were present at our last meeting in Memphis—but to all members who were not in attendance we wish to state that the coming meeting will be the most important one in the history of the association. The discussions of the principal issues connected with the general up-building and bettering of the conditions of the Hardware business, together with the social mixing and intermingling with each other, will far more than pay for the time and expense of attendance.

We therefore earnestly request that every firm belonging to our association send at least one representative. You will please notify us as soon as possible, if you will be represented at the meeting. Reduced rates will be given on all the railroads on the certificate plan, and you will therefore call for a certificate when buying your railroad ticket.

It is expected that the coming meeting will be an important one and an enjoyable occasion, at which there will be a full representation of the association.

Manufacturing.

THE AMERICAN SAFETY LAMP & MINE SUPPLY COMPANY have been organized at Scranton, Pa., with a capital stock of \$100,000. The company will manufacture and sell Miner's Safety Lamps, Rock and Coal Drills, Mine Supplies, general Brass Work, &c. The board of directors comprises the following gentlemen: Hon. M. E. McDonald, O. S. Johnson, Hon. L. A. Watres; W. J. Lewis, E. J. Lyuett, Alexander Dick, H. B. Smith and A. H. Christy. Hon. M. E. McDonald is president of the company; O. S. Johnson, vice-president; A. H. Christy, treasurer, and Alexander Dick, secretary. The company have secured the large and valuable works and land lately occupied by the Scranton Iron & Brass Company, and are now prepared to sell American Brass Goods and American Safety Lamps. They are contemplating making Lamps of aluminum, thereby reducing the weight of Lamps which formerly weighed from 3 to 4 pounds each to less than 1 pound.

C. C. Good and A. C. Good have purchased a large majority of the stock of the American Bit Brace & Tool Company, Buffalo, N. Y., and the former will assume the general management of the company. He was for many years connected with the firm of W. H. Glenny, Sons & Co., the extensive crockery importers. A. C. Good has been secretary and treasurer of the American Bit Brace & Tool Company since their organization.

The Grand Crossing Tack Company are putting in an additional 100 horsepower boiler. They advise us that the demand for Clawhandle Carpet Tacks and their other specialties has obliged them to increase their power.

The Kenton Lock Mfg. Company, Kenton, Ohio, are now operating a foundry with 10 tons capacity daily in connection with their establishment, melting almost exclusively for their own goods. The Lock department has been and is operated day and nights until 9 p.m. The demand for Refrigerator Locks and trimmings has been exceptionally large, the company having contracts that extend clear through the month of June next.

The entire plant of the Youngstown Stamping Company, Youngstown, Ohio, has been put in operation, with the exception of the Glass factory, which is expected to be working within a very short time. This concern reports a large accumulation of orders with the prospects of a heavy demand for their line of Oil Cans, Tin Specialties, &c., during the spring and summer. Some improvements have been made in their factory, which will allow them to turn out a considerably larger quantity of Tin Fruit Cans during the coming season, for which this concern have a very large demand. As before announced, the entire plant will be operated under the management of W. C. Hine, receiver.

The Champion Saw Company of Beaver Falls, Pa., manufacturers of Solid and Inserted Tooth Circular Saws, are putting up some additional buildings, almost directly across the tracks of the Pittsburgh, Fort Wayne & Chicago Railroad, from their present location. The plant is to consist of main building, boiler house, temper shop, oil house, &c. In the main building will be hammer room, machine shop, pumping room, stock room, engine room and office. This building will be fitted with the latest improved saw-manufacturing machinery, and heated throughout with steam. The boiler house will contain also the smithing room, forges, and this building will be in the form of a wing of the main building. The temper shop will be placed some little distance from the other building and fitted up with furnaces, &c., decided to give the very best results. The whole plant is under contract to be completed by June 1, and the concern expect to be ready for operation in their new quarters very shortly after that date.

The Stahlberg Clock & Time Stamp Company have arranged for the establishment of a plant at Columbia Heights, a Chicago suburb. Ground has been broken for a factory building of brick and stone, to be located two blocks south of the Chicago & Eastern Illinois Station on Vincennes avenue. The company are reported to have a capital stock of \$125,000 and will begin work this season with a large force of men.

The Illinois Cycle Company of Chicago are about to erect a building 50 x 150 feet, two or three stories high, at Sacramento and Carroll avenues. They have already invested \$25,000 in plant and equipment and have a large part of their output for 1893 sold in advance. They will be able with the new plant to turn out 1,000 to 1,500 bicycles a year.

The Novelty Stamping Company who has been recently organized at Bellaire, Ohio, will manufacture Stamped Ware and all kinds of Sheet Metal specialties. The buildings comprising their plant are all new, and fitted up with the most improved machinery for their line of manufacture. The company are not yet in full operation owing to the fact that their dies are not completed. When they are, employment will be given to some 200 persons. The officers of the company are M. L. Blackburn, president and general manager; A. Klotz, vice-president, and W. C. Bergundthal, secretary and treasurer.

The Port Townsend Steel Wire & Nail Company, who have recently erected a fine and substantial plant at Port Townsend, Wash., have a capacity of 20 tons of finished Wire and 400 kegs of Wire Nails daily. In addition they have a 15-ton foundry and 2-ton Brass foundry, and a machine shop, which they refer to as

the best equipped on Puget Sound. The officers of the company are: Frank A. Bartlett, president; Nath. D. Hill, vice-president; J. M. Lively, general manager and treasurer; A. R. McLaughlin, secretary, and George Alexander, superintendent. The company are manufacturing Wire Nails, Spikes, Bright Market Wire, and Broom and Fence Wire, and issue an illustrated price list of Standard Steel Wire Nails, in which the different kinds and sizes are represented. They are also conducting a galvanizing works, build machinery, and make Gray Iron Castings of every description to order. The company, while a new one, is under the charge of parties who have had a long and valuable experience in the Wire and Nail business.

The Sag Harbor Tool Company, organized in June last, have during the past few months been perfecting arrangements for the manufacture of edge tools, and are now in a position to execute orders for goods in their line. They are producing a line of Socket Firmer and Socket Firmer Paring Chisels, Socket Firmer Gauges, Socket Framing and Corner Chisels and Slicks, together with Carpenters', Razor Blade, Shingle, Wagonmakers', Coachmakers' and Farmers' Drawing Knives. Tanged Chisels and Gauges they are not in a position to furnish yet, but will be later. A strong three-story brick building, originally used as a flouring mill, has been secured on advantageous terms, to which has been added a forge shop, making the total length of the plant 114 feet. A good working capital, we are advised, has been subscribed and all paid in, with assurances of more, if required. The factory is located at the end of the steamboat dock, from which two steamers ply between Sag Harbor and New York. Some time ago a number of citizens identified with the bank, steamboat company and other interests of the town, conceived the idea of adding to the business of the place, and, taking form in the manner alluded to, secured the services of W. C. Baily, as superintendent, long connected with the manufacture of this class of goods in another State. The president of the Tool company is also at the head of the steamboat company, which will insure conveniences and favorable freight facilities. George B. Curtiss, 96 Chambers street, New York, has been made the sole selling agent.

Prize Competitions

\$25.00.

IN ORDER to obtain information which will be of practical service to our readers we hereby announce

Prize Competition No. 17.

SUBJECT :

How Merchants Should Treat Traveling Salesmen.

In view of the fact that traveling salesmen occupy an exceedingly important place in securing orders, the manner in which they should be treated is a question deserving the careful consideration of the trade. This competition is intended to call out suggestions on this subject, and may naturally touch upon such points as the following :

The courtesy which should be shown to traveling salesmen ;

The extent to which it is advisable for the merchant to give attention to all salesmen offering goods in his line ;

The disadvantages of discourtesy ;
The information which may be received by the merchant ;
Legitimate methods of securing the lowest prices ;
The advisability of purchasing from comparatively few or from a larger number of travelers ;
To what extent the merchant should ask quotations on each article or leave the price to the salesman ;
The advantages and disadvantages of holding orders for favorite travelers ;
Treatment of travelers' broken promises and misrepresentation ;
Practices justifying a discontinuance of buying from them ;
The faults of merchants in the treatment of travelers ;
The faults of travelers in the treatment of merchants.

This competition will remain open until April 15, 1893.

Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers will be favorably regarded as meeting the purpose for which these competitions are announced.

The following prizes will be awarded :

First prize	\$12.50
Second prize	7.50
Third prize	5.00

The prizes will be awarded for answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than April 15, 1893. They should be addressed as follows :

DAVID WILLIAMS,

96-102 Reade street,

New York.

Prize Competition No. 17.

The committee to whom the contributions in Prize Competition No. 3 were referred have awarded the prizes as follows :

First Prize to W. T. WARSOP, Fairport, N. Y.

Second Prize to H. C. WISEMAN, Springfield, Ohio.

Third Prize to G. B. KORBETT, New York.

Other Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named :

No. 14. Closing March 25.

Suggestions Regarding the Sale of Spring and Summer Goods.

No. 15. Closing April 1.

Suggestions in Regard to the Sale of Athletic and Sporting Goods.

No. 16. Closing April 8.

Three or More Rules to be Observed in Buying.

No. 17. Closing April 15.

How Merchants Should Treat Traveling Salesmen.

Another subject will be announced in our next issue.

Cincinnati Industrial Assembly.

THE THIRD of the series of industrial assemblies instituted by the Merchants' and Manufacturers' Association of Cincinnati was held at the Gibson House in that city on the evening of March 14, in the interests of the metal trades.

An informal congress beforehand in the corridor of the hotel served to bring about introductions, and later the march was taken to the dining hall, where the gentlemen took seats.

President Stewart Shillito of the Association sat at the center of the main table, while at his left was President-elect W. T. Perkins of the Manufacturers' Association and Archer Brown at his right.

At the table were President Thomas P. Egan of the J. A. Fay & Egan Company, George M. Verity of American Roofing Company, John Crowther of the Globe Machine Works, John B. Morris of the J. B. Morris Foundry Company, G. M. Morris of the same company, G. C. Witt of the Witt Cornice Company and Harker Mfg. Company, Charles E. Witt of Witt & Brown, while at the other tables were C. W. Magill of W. W. Magill & Sons, D. B. Bayless, F. H. Lawson of F. H. Lawson & Co., W. S. Dickinson of W. S. Dickinson & Co., H. B. Wells and Charles Walter Bell of the Cincinnati Tin & Japan Company, W. W. Tyler of Union Axle Company, Myer Ottinger of Isaac Fallers' Sons & Co., E. W. Vanduzen of the Vanduzen & Tift Company, W. T. Johnston of Crowley & Johnston, J. C. Hobart of Triumph Compound Engine Company, Chris. Kiechler, President of the Kiechler Mfg. Company, Thomas J. Bell of Thos. J. Bell & Co., J. A. Jones of Robert Jones & Co., Col. J. A. Andrews of the Newport Rolling Mills Company, F. H. Osborn of Osborn, Hutchins & Hunt, Ervin Maxwell and Walter H. Maxwell of the Emery and Palace Hotels, F. B. Lotze of A. Lotze's Sons & Co., W. E. Ward, J. R. Stewart of the Bradford Milling Company, W. L. Clements of Clements & Co., H. J. Yosiger of the Eureka Yeast Company, James A. Sebastian of Mitchell, Tranter & Co., L. P. Phipps of the Globe Rolling Mill Company, A. C. Jones of the Jones Bros. Electric Company, Chas. Davis of the Lodge & Davis Machine Tool Company, O. D. Bryant, of the Crane & Breed Manufacturing Company, Chas. F. Thompson of the Lane & Podley Company,

James Powell, President of the Wm. Powell Company, G. H. Merkel of Merkel Bros., H. H. Suydam of the Cincinnati Mfg. Company, J. S. Chambers of the Cincinnati Mfg. Company, George M. Clark of the Mitchell-Tranter Company, P. G. March, E. P. Wilson, Earl W. Stimson of the Geo. W. McAlpin Company, Chas. J. Stern of Strauss & Stern.

When the collation had been fully attended to, introductory remarks were made by chairman Shillito, after which he introduced W. T. Perkins, chairman of the Entertainment Committee, who announced that the next assembly would be held at the Hotel Emery, and would be for the wholesale grocery, spice and drug trade.

Among the speakers of the evening were: Thomas P. Egan, president of the J. A. Fay & Egan Company; F. H. Lawson of F. H. Lawson & Co., H. D. Wells of the Cincinnati Tin and Japan Company, Col. J. A. Andrews of the Newport Rolling Mills Company, Charles F. Thompson of Lane & Bodley, Charles Davis of the Lodge & Davis Company, and Joseph Jones of Robert Jones & Co. The topics most prominently touched upon were the Iron, Copper, Brass and Tin interests. Each assembly has shown an increase in numbers and interest over the first.

Bicycles.

REFERRING to the position which Bicycles may have in connection with the Hardware trade, we have the following advices from a house in New England who, for the past year, have been giving some attention to this line:

We are of the opinion that Bicycles are destined to be a part of every Hardware dealer's stock in the near future. We sold them in 1892 and were satisfied with the result from our first season. We are expecting to sell many more this season. Fishing Tackle we are also taking up this season for the first time, and would go into a full line of athletic goods had we the room to display them, as we are satisfied that these goods are coming into more general use, and there is a good margin of profit on most of it; but do not think it advisable to undertake to handle them without ample show room. This we are short of, and must content ourselves to let this latter line pass for the present; but we consider sporting and athletic goods directly in the Hardware line.

The following reference to recent announcements of manufacturers of Bicycles, referring to the machines they are putting on the market, will be of interest in this connection:

THE SMALLEY BICYCLES are made by the Marble Cycle Mfg. Company, Plymouth, Ind., and 271 Wabash avenue, Chicago, who illustrate and describe these Machines in a recent catalogue. The line shown includes Smalley Light Roadster, Smalley Road Racer, Smalley Track Racer, The Buck, and Smalley Ladies' Wheel.

UNION CYCLE MFG. COMPANY, 166-170 Columbus avenue, Boston, and 293 Wabash avenue, Chicago, manufacturers of Union Bicycles, introduce their 1893 Machines with a greeting to cyclists, in which the desirability of Union Wheels are set forth. Their catalogue shows the Union P. D. Q., Union No. 3, Union 2.10, and a Ladies' Wheel, Union No. 2.

LOVELL DIAMOND CYCLES, made by John P. Lovell Arms Company, Boston, Mass., include Model 10, a light Roadster or Road Racer; Model 11, pneumatic

Tires; Model 12, cushion Tires; Ladies' Models 13 and 14, pneumatic and cushion Tires; Models 15 and 16, convertible for ladies or gentlemen; Models 2 and 3, Gentlemen's Wheels; Models 5 and 6, Ladies' Wheels; Models 8 and 9, convertible; Youths' Safety; Prize Safety, for ladies or gentlemen; Nos. 83 and 84, Boys' and Girls' Safety, and Little Beauty Safety, No. 85. Their catalogue also illustrates girls' Tricycles, boys' all metal Velocipedes and Bicycle sundries.

THE AMERICAN ORMOND CYCLE COMPANY, 2081 and 2083 Seventh avenue, show their Machines on diamond-shape sheets held together by colored cord. The Wheels shown and referred to in a brief manner are the Ormond Road Racer, Ormond Models D and C; Ladies' Ormond, and Ormond Front Driving Safety.

HORTON, GILMORE, MCWILLIAMS & CO., 172, 174 and 176 Lake street, Chicago, have just issued their Bicycle catalogue for 1893 describing their Improved Coventry Cross and other wheels. The machines illustrated are the Coventry Cross Racer, 26 pounds, offered as "the best that money can buy," the Improved 1893 Coventry Cross Roadster, the Improved 1893 Ladies' Coventry Cross, the No. 26 Combination, for boys and girls, the No. 25 Boys' Pneumatic and Cushion, the No. 24 Boys' Pneumatic and Cushion, the Nos. 22 and 23 Boys' and Girls' Wheel, for children under 10 years of age. The Greyhound and the Clincher Pneumatic Tires are illustrated and described. Other goods referred to in this catalogue are girls' Tricycles, boys' velocipedes, Iron and Wood Express Wagons, Bicycle Lamps of various patterns, Bells, Horns, Whistles, and Bicycle supplies in general. The Eureka anti-vibrator, to relieve the vibration, or bumping of handles, is specially illustrated and described. The catalogue covers 20 large pages, and is neatly bound in blue paper covers.

It Is Reported--

That the company recently organized at Brunswick, Md., to conduct a general Hardware and Agricultural Implement business, will be known under the style of Wenner, Swank & Co. They have purchased the Stove and Tinsmith business of Smith & Swank, which will be conducted in connection with their other lines.

That the Hardware store of E. G. Morgan & Co., Clayville, Pa., was robbed on the 3d inst.

That G. Henry Allen has opened his Stove and Tin Store at Woodbury, Conn.

That G. E. Russell & Co., Holyoke, Mass., have leased the store, 112 High street, and will occupy it as a branch of their Hardware establishment, making a specialty of Agricultural Implements.

That A. Rittigstein, dealer in Hardware, Stoves and Tin, Oakland, Cal., has sold out.

That the Hardware firm of Westbrook & Byrne, Redlands, Cal., has been dissolved.

That the Niebuhr Hardware Company, Wells, Minn., are out of business. Anderson & Schneider continue.

That the Charlotte Hardware Company have commenced business at Charlotte, N. C. They will conduct a wholesale and retail business.

That O. C. Morton's Stove and Tinware store, Nebraska City, Neb., was destroyed by fire on the 10th inst. Loss, \$800; insurance \$500.

That John Hollis is now conducting the Hardware business formerly carried on by Hollis Bros., Canfield, Ohio.

That J. H. Guernsey, dealer in Hardware, Waterbury, Conn., has sold out his

business to D. B. Wilson, who will conduct it in connection with his present store.

That the Implement Store of W. E. Barrett & Co., Providence, R. I., was damaged by fire on the 8th inst. The loss is estimated at \$1700.

That M. J. Graves will soon enter the Stove and Tinware business at Vergennes, Vt.

That the Langstaff Hardware Company, Memphis, Tenn., gave a dinner on the 11th inst. to their employees, some 43 of whom enjoyed the hospitality of the company.

That C. W. Bowtelle, Fort Edward, N. Y., is having a new plate glass front put in his Hardware store.

That A. R. Penfield has purchased the interest of Mr. Wallace in the Hardware firm of Wallace & Quigg, Oswego, N. Y. The business will hereafter be conducted under the style of Quigg & Penfield.

That the Highland Hardware Company is the name of a new concern which has recently entered business at Armory Hill, Mass. L. J. Bennett, formerly with the Coburn Trolley Track Mfg. Company, Holyoke, is the business manager of the new firm.

That F. P. Carruth & Co., Hardware dealers, Orange, Mass., have taken possession of their handsome new store.

That Victor Peterson, dealer in Implements, Ragan, Neb., has discontinued business.

That F. C. Herren, dealer in Hardware and Implements, Macksburg, Iowa, has admitted a partner in his business.

That Millard Bros., Hardware, Cherokee, Iowa, have been succeeded by W. H. Millard.

That Kroeser & Neufeld, Hardware merchants, Henderson, Neb., have sold out to Neufeld & Bro.

That James Armstrong, the Hardware and Implement dealer at Dyersville, Ind., has admitted a partner.

That the Hardware store of W. H. Robinson & Co., Clinton, Ind., was destroyed by fire recently.

That the copartnership heretofore existing between Homer Foot, Homer Foot, Jr., and Francis D. Foot, under the firm name of Homer Foot & Co., Springfield, Mass., has been dissolved by mutual consent, Homer Foot, Jr., retiring. Homer Foot and Francis D. Foot will continue the Hardware, Iron and Steel business under the old firm name.

That L. H. Libby has removed his stock of Hardware from Rockland to West Rockport, Me.

That Hornby & Carman, Ogden, Utah, are desirous of disposing of their Hardware, Stove and Tinware business, and are offering the stock for sale.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

There have been further signs of improvement in the distribution of various lines of Paints and Colors, but the spring season movement is still a little backward, and the market is not entirely bare of disturbing features. Prominent in the latter connection is the effect of new rumors of cutting prices of White Lead and growing competition from corrodors not identified with the National Lead Company. On the other hand, the recent stiffening of prices of Linseed Oil has had the effect of curtailing excessive

competition in various lines of Paints into which the Oil enters as a prominent ingredient. In point of fact, matters are in a somewhat unsettled condition, as far as the leading pigments are concerned, and evidence is not wanting that, momentarily at least, the special prices made on White Lead and domestic Oxide of Zinc latterly to some few buyers of large lots, have operated to impair confidence of distributors who keep a watchful eye upon current events. It is worthy of note in this connection, however, that the price of Pig Lead has advanced during the past week; that quite liberal orders have been placed for various lines of bulk colors used by grinders, and that all signs promise favorably for heavy consumption immediately upon the change in weather conditions more favorable to out-door work. In brief, a good volume of business is practically assured, whatever uncertainty there may be about prices.

White Lead.—The market is somewhat disturbed by various rumors regarding special prices made some time ago by one or two branches of the National Lead Company and the aggressive propensities of the buyers interested in the deals. Along with this is another disturbing factor in the shape of a report emanating from speculative quarters, to the effect that outside corrodors located in Pittsburgh will soon enlarge their plant and branch out as more formidable competitors with the combine and with Western concerns that have nearly completed arrangements for increasing their output, considerably. Being thus confronted with decided uncertainty as to the future of the market, discreet buyers observe more than ordinary caution; but, according to all accounts, the volume of business has increased during the week under review, not only in Pure Lead but in several of the various classes of mixtures. The National Company's inside quotations are $6\frac{1}{2}\phi$ for Lead in Oil and 6ϕ for Dry Lead, and those outside corrodors who work on wholly independent lines have quoted $\frac{1}{2}\phi$ less. At the moment the condition of the market for crude material leaves the outsiders at some disadvantage, as far as percentage of profit is considered, but otherwise is without visible effect.

Zincs.—Rumor has it that heavy output and merely normal demand has not only strained but broken the bands that, for a considerable time, held the market for American Oxide in very good shape. As a matter of fact, the indications are that, as in the case of White Lead, special prices are made where really desirable orders may be involved, and that the combine is not so strong as it was two or three months ago. For the moment $4\frac{3}{4}\phi$ would appear to be top price for Prime Quality, in wholesale lots, and $4\frac{1}{4}\phi$ is known to have been shaded on common quality. Domestic product of the exceptionally high grade, intended to compete with best foreign Zincs, may be had at $6\frac{3}{4}\phi$, @ 7ϕ less usual discounts. The imported article is quoted as heretofore, but finds rather slow sale at the moment.

Colors.—No radical changes in prices of leading lines of Dry Colors have been announced, and, on the surface, it looks as though the market was without disturbing feature. In the instance of Dry Colors for special purposes and particular lines of Oil Colors this may be the case, but N. L. C. Tinting Colors seem to be gradually gaining more foothold and influencing prices for old line goods. Bulk goods for grinders' use have been rather more active, particularly for future delivery, but show hardly any variation in price.

Miscellaneous.—Quite good orders have been placed for Whiting, Paris White and Putty for delivery immediately upon opening of navigation, chiefly at prices in line with those that have ruled for several weeks. Block Chalk remains firm at $\$2.25$, ex-steam, in the absence of any considerable addition to the supply. Barytes and Clays generally have been rather slow and without material change in prices.

Oils and Turpentine.

The erratic course of the market for Lard and inferior Greases, to say nothing of the economy in the use of nearly everything in the line of lubricants and soap-making material, has served to give the Oil market a dull appearance. The backing and filling of the speculative interest had also tended to impair confidence in the stability of present values of Lard, Cotton Seed and kindred Oils. In fact, there seems to be no substantial firmness at the moment, except in the instance of Linseed Oil, which has the dual support of enhanced cost of raw material and less friction between late conflicting interests. Speaking in a general way, business has been commonplace, and at this writing the demand for all Oils is strictly routine.

Linseed Oil.—At the higher range of prices established last week there has been a fair volume of business, but jobbers and large consumers are slow to anticipate probable higher prices in the immediate future, although effort has not been spared to convince them that the situation of the market for raw material and greater harmony among the crushers is liable to result in a further advance ere long. Still it would appear that sales are well up to the average for the season, and the indications are encouraging for a broadening out of the outlet in the immediate future.

Cotton-Seed Oils.—There has been a sharp decline in prices of both crude and refined products, and comparatively little business. In short, the market seems to be suffering from the relapse that usually follows excessive speculative stimulation, and the outlook at present is very uncertain. The one fact remains, however, that prime quality Crude Oil may now be secured at 45ϕ , prime summer Yellow at 55ϕ , and other varieties at corresponding prices. The Union Oil Company have reduced prices for their products considerably, and now offer as follows:

	Lots of 1 to 10 bbls.	Lot of 10 bbls. and over.
Pure Salad.....	67ϕ	65ϕ
Olive Flavored.....	67ϕ	65ϕ
Winter White.....	67ϕ	65ϕ
Winter Yellow.....	66ϕ	64ϕ

The above sold by weight, $7\frac{1}{2}\text{ lb}$ to the gallon.

Lard Oil.—The market has been exceedingly dull. City pressers have dropped their price for prime quality Oil to $\$1\text{ }\text{\textcent}$ gallon, sellers of Western brands are down to the same figures, but the concession fails to stimulate business in the slightest degree. The fact that present value is abnormally high not only causes jobbers to buy in a very conservative manner, but restricts consumption to greater or less extent.

Fish Oils.—Holders of crude Sperm Oil are now asking $\$1\text{ }\text{\textcent}$ gallon, since only 800 barrels remain unsold here, while the amount to come forward is insignificant. The manufactured product is no higher in price, but offered sparingly at the moment and only at full former prices. Whale, Menhaden and Cod Oils are firm at last week's prices, but the market is bare of new feature and rather dull.

Miscellaneous.—Common Olive Oil is rather weaker, with sellers at 63ϕ @ 65ϕ for spot lots and 62ϕ or less for future shipments from abroad. Coconut Oil is also unsettled, with $6\frac{1}{2}\phi$ apparently a full price for wholesale quantities on the spot and as low as 6ϕ quoted for future shipments. Cochin may be secured at $7\frac{1}{4}\phi$ on spot and 7ϕ to arrive. Tallow Oil is easier, but, in the absence of increase in the offering, prices are not positively lower. Red Oils slow at the moment, with prices rather weak.

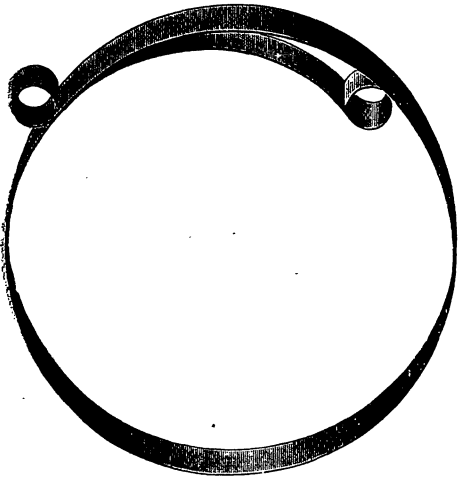
Spirits Turpentine.—Demand has been of very moderate volume and the market is slow at this writing, with prices about $\frac{1}{2}\phi$ lower than they were a week ago. Sellers manifest rather more anxiety, but force no large quantities upon the market here or in the South.

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Monarch Trouser Guard.

Monarch Cycle Company, 42-52 N. Halsted street, Chicago, are offering the trouser guard herewith illustrated. It is a metal band with the ends rolled over, and in use is sprung around the trouser at



Monarch Trouser Guard.

the ankle. It is referred to as a practical device for protecting the trousers from contact with the chain or sprocket wheel of a machine.

The Buckeye Churn.

The Bukeye Churn Company, Sidney, Ohio, are offering the form of churn as illustrated in Figs. 1 and 2, embodying the principle of concussion to produce desired results. In alluding to its construction and operation, the manufacturers state that it requires but one fourth the power crank or dash churns do, as by rocking the churn backward and forward the barrel is thrown on an inclined plane alternately from one end to the other, thus dashing the contents by its own weight into spray, and that the rebound or reaction, in connection with the mechanical

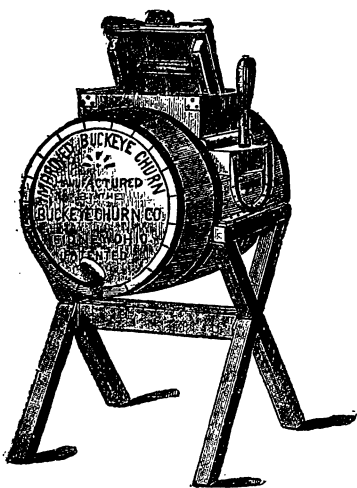


Fig. 1.—The Buckeye Churn.

fact that the fulcrum at the bottom of rockers changes from one to the other in accordance with the change in weight, balances the weight in its motion, thereby saving three-fourths of the labor required with other devices. The manufacturers claim that the apparatus does not heat by exercise; that it has no rim of cork to leak or get sour; that it is always open to admit air and prevent accumulation of gases, and that there are no cogs or journals to

get out of order. The point is made that the barrel is made of selected white oak staves thoroughly seasoned, varnished in

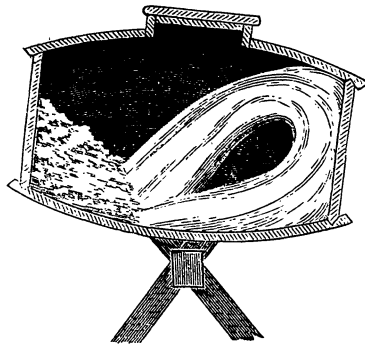


Fig. 2.—Showing its Operation.

natural wood, strongly and substantially put together.

The Buck.

The Marble Cycle Mfg. Company, Plymouth, Ind., and 271 Wabash avenue, Chicago, have put a racing machine on

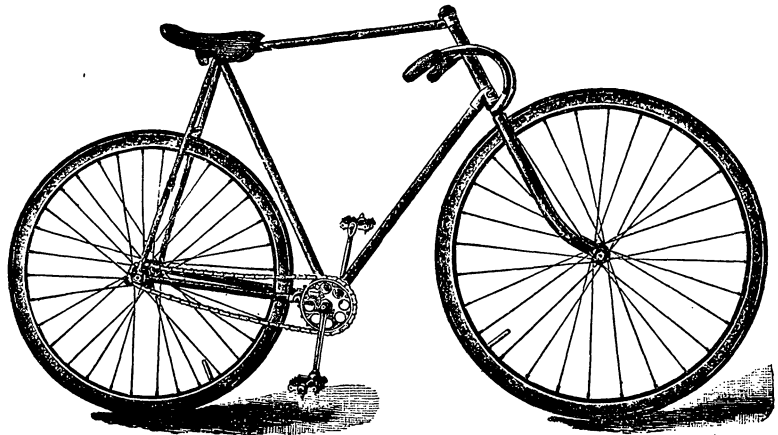


Fig. 1.—The Buck.

the market, known as the Buck, as illustrated herewith. The peculiarity of the wheel is that the handle bars, instead of being put on in the usual way, are

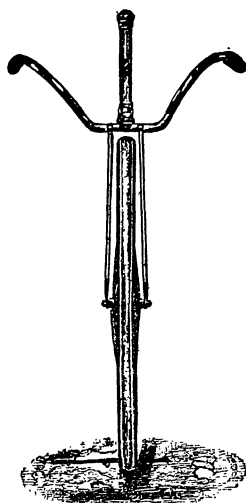


Fig. 2.—End View of the Buck.

attached at the top of the fork crown. It is stated that by attaching the handles in this manner considerable weight is saved, and that as a result the bicycle is much stiffer in the steering. The position assumed by the rider is not different from that taken on the regular style wheel. In

addition to the new style handle bars, the frame is built high enough to permit the saddle to set directly on the frame itself, and to do away with the usual seat post. The finish is referred to as a new feature, being enameled by a process peculiar to this machine known as aluminum enamel, which, it is stated, presents the appearance of aluminum. The machine is designed for track use rather than for general riding, and for the former is highly recommended by the makers.

Pulley Marker and Sash-Weight Fastener.

J. W. Skelly & Son, Bristol, Conn., are introducing the articles shown in Figs. 1 and 2. In marking for Common Sense sash pulleys the gauge rod of the marker, Fig. 1, is set at the distance the pulleys are to be from the top of the casing, after which the lug at the bottom of the marker is slid into the parting strip groove until the gauge strikes. Marks are made for both pulleys by hitting the handle with the hand. The claims are made that both pulleys can be marked for in the time required to pick up a rule, square or marking gauge; that it marks the centers accurately, and that it saves a large amount of fitting over.

The sash-weight fastener shown in Fig. 2 is referred to as making a neater looking job than when the cord is tied, and as not

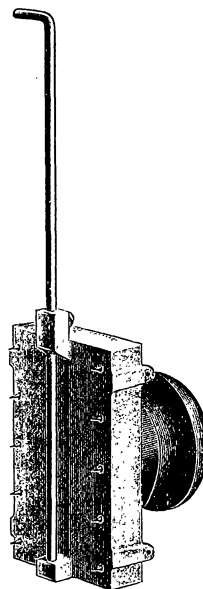


Fig. 1.—Grennan's Sash Pulley Marker.



Fig. 2.—Troop's Sash Weight Fastener.

so liable to become unfastened. The fastener is adapted for use on braided or twisted cord.

Monarch Broiler and Odorless Fry Pan Combined.

Maltby, Henley & Co., Rocky Hill, Conn., are introducing this household utensil, as illustrated herewith. As shown in Fig. 1, the lug on the lower edge of the pan fits into the slot of the casting, and when the pan is in place over the casting, holds it in position as the pieces are

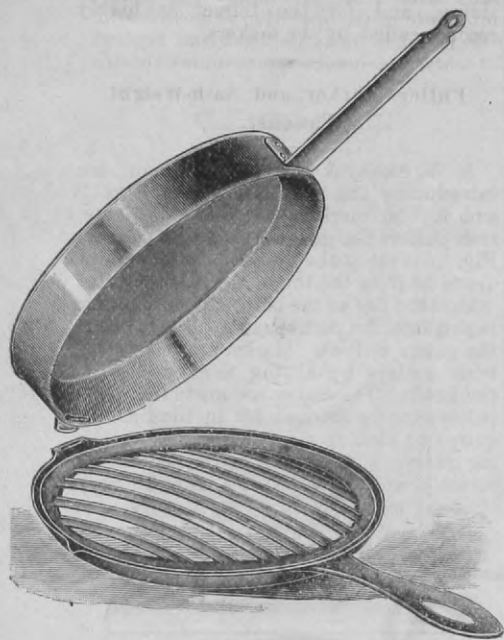


Fig. 1.—The Monarch Broiler.

reversed, or serves as a hinge when the pan is raised at right angles to the casting, and holds it in position. In Fig. 2 the broiler and pan are in position for broiling the steak, while in Fig. 3 is shown the pan as used with a cover, which accompanies every broiler or pan. The arrow indicates the opening through



Fig. 2.—Broiler in Position for Use.

which the odors and smoke are sent up the chimney, when used with the stove lid removed; or when used on the top of the stove, the odors and smoke are de-

any size trousers, while the spring action upon the cloth is designed to remove all wrinkles and to bring the leg of the trousers back into perfect shape, in the

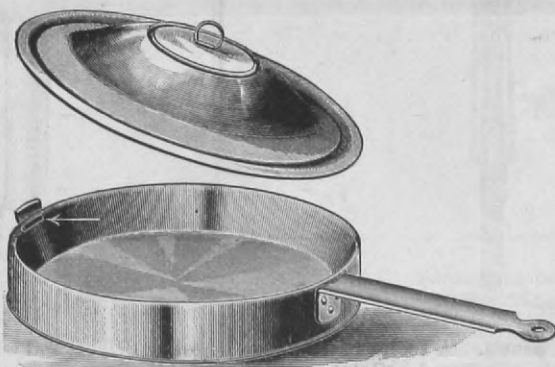


Fig. 3.—Used as an Odorless Fry Pan.

signed to be almost wholly absorbed in the heated jacket underneath. It is remarked that the combination is a simple one; that its merits are quickly seen and explained, and that it covers many points

latest style. It is mentioned that to accomplish this result it is necessary to dampen the cloth after the stretcher is inserted, allowing it to remain in over night.

The Harvard Pants Stretcher.

George H. Gregory, 35 Arch street, Boston, is introducing the pants stretcher,



The Harvard Pants Stretcher.

as shown herewith. The stretcher is made of steel wire and so arranged that the hip part of the stretcher can be adjusted to

Myers' Combination Spray and Vermorel Nozzle.

F. E. Myers & Bro., Ashland, Ohio, are furnishing this nozzle, as illustrated herewith, in combination with their bucket spray pumps and barrel spray pumps.



Fig. 1.—Combination Spray and Vermorel Nozzle.

The spray nozzle is arranged so that the male end will throw a solid stream. It is explained that by placing on the sprinkler tip it becomes a complete sprinkler for use in connection with flower beds and for any purpose where a sprinkler is required, and that the spray nozzle throws



Fig. 2.—Solid Stream and Spray.

a spray as fine as mist. The point is made that with this combination the operator is able to throw a solid stream, to sprinkle or spray, giving the full use of the pump for any requirement necessary. The vermored nozzle is constructed to throw a spray as fine as mist, and is supplied with two different caps, so that the quantity can be changed. It is also provided with a needle attachment to open



Fig. 3.—Spray Sprinkler.

up the port should it become closed [with any sediment or particles that may be in the material used in spraying. The manufacturers state that the nozzles cover the requirements for spraying fruit trees, shrubbery, &c., and that they are furnished in connection with the Myers barrel and bucket spray pump.

New Favorite Family Scale.

John Chatillon & Sons, 85-89 Cliff street, New York, are offering the scale here shown, which will be known as the New Favorite. The main difference between this and the Favorite is the material of which it is made and the method of construction. This scale is manufactured

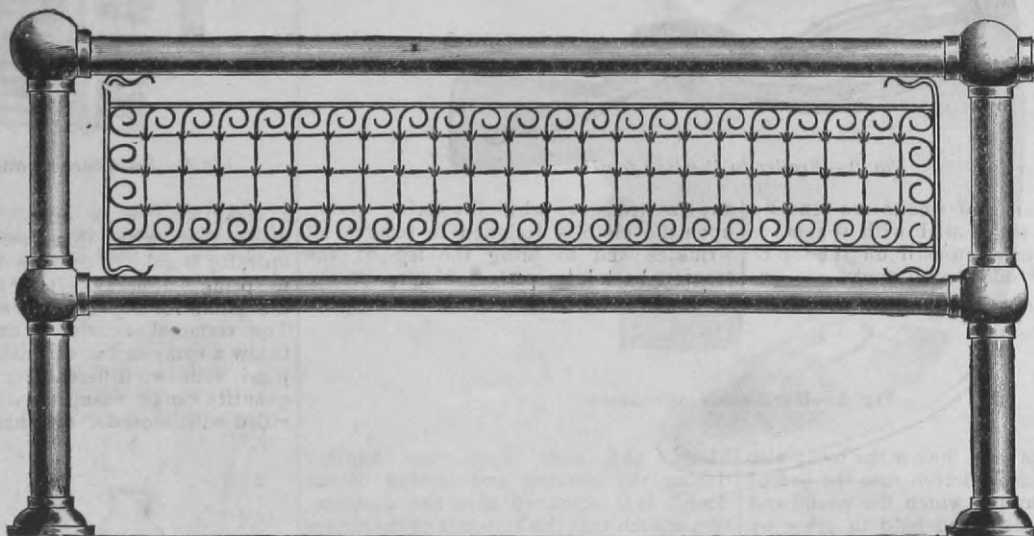
*New Favorite Family Scale.*

of sheet steel, making it light and strong, instead of cast iron, as heretofore. The risk of breakage in handling or shipping is minimized, and the freight charges reduced, as its weight is but about one-half of that of the cast scale. They will be made in four sizes, 5, 12, 24 and 48 pounds, and in three styles, with platform,

Exposition Railings.

The Crane Company, Randolph and Jefferson streets, Chicago, are devoting considerable attention to the manufacture of railings for the inclosure of exhibits at the coming World's Fair. These railings are made from 1½ to 2 inch pipe, and, together with the fittings and

trimmings, are finished in four styles, namely, plain black for painting in any color, antique copper, polished steel and heavily plated brass. A variety of patterns has been designed to meet the views of purchasers, covering very plain forms, with single rail, a little more expensive with two rails and quite elaborate designs

*Exposition Railing.*

platform with scoop, and fork with scoop; These goods will be known by the same numbers, descriptions, &c., as applied to the Favorite, the manufacture of the cast scale being entirely discontinued.

At Birkenhead and Yarmouth in England sea water is pumped up and distributed in iron pipes to water the streets and pronounced very satisfactory.

with ornamental panels. A section of the latter is herewith illustrated. Gates are made in a number of styles, such as a lifting bar, a telescopic tube or swinging on hinges. The company have issued a circular describing these railings, also stating that through an exclusive concession they have established on the exposition grounds a branch store and shop, where they can cut, thread and prepare any style of railing for erection.

Clock-Registering Savings Bank.

T. G. Ellsworth, 85 Chambers and 67 Reade streets, New York, agent for A. H. Walker, Brooklyn, N. Y., is introducing the dime clock bank, as herewith shown. The minute hand registers the cents and the hour hand the dollars that are in the bank at any time. The operation of the bank is described as follows: The bank is automatic in its operation; the first dime that is put in locks the bank and registers 10 cents. Each subsequent dime deposited

*Clock-Registering Savings Bank.*

is indicated upon the clock dial, and the one hundredth dime deposited unlocks the clock so that the door may be opened and the \$10 taken out. The clock is finished in three colors of bronze and presents an attractive appearance.

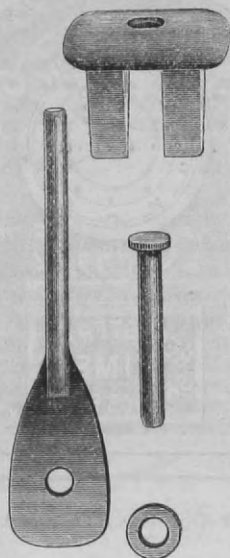
V. E. Adler, 927 Seventh street, Washington, D. C., has invented a form of nail, the object being to provide a nail which

can be easily driven, and when driven will not only be more secure, but also more difficult to draw than the ordinary nail; also to provide a nail by which, by reason of its form, the liability of mistake in driving with instead of across the grain is obviated. The lower portion of the nail is laterally extended in the form of a wedge toward the point of the nail, the upper portion of the wedge having square shoulders. The sides of the wedge part of the

nail are beveled, forming a cutting edge. Above the wedge are incuts, or grooves cut in the nail, to further increase the holding power. The point is made that when the nail is driven the wedge-shaped lower portion cuts through the wood, preparing a path for the upper part of the nail to enter, and that when driven the wood fills around the shoulders and in the incuts, making it more difficult to draw.

Keystone Handle Attachment.

Keystone Handle & Tool Company, 104 and 106 John street, New York, are offering an attachment for securing tools



[Fig. 1.—Keystone Handle Attachment.

to handles, as illustrated herewith. As shown in Fig. 1, the parts of the attachment include a round piece of iron with a flattened end, which is fastened in place by the rivet passing through the handle

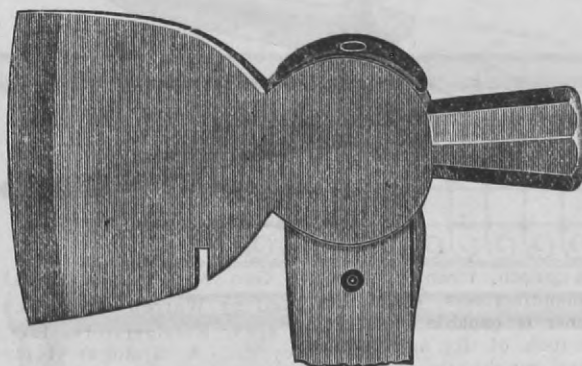


Fig. 2.—Handle and Attachment.

and hole in the iron, below the tool; also a wedge which is driven into the end of the handle, through which the round end of the iron passes, and held in place by the washer being riveted on top of the wedge. The form of wedge shown in Fig. 1 is suitable for machinists' hammers, while a curved wedge is used for shingling hatchets, as in Fig. 2. The attachment is also furnished, with handles, for adze eye, riveting, farriers', carpet and artisan hammers, half hatchets, sledge, maul, tool and striking hammers, railroad chisels, wood choppers and stone mauls, napping hammers, single and double bitted axes, &c. The handles are of polished hickory, and the attachments of polished malleable iron. The handles and attachments are sold together or separate, as desired.

Gillespie's Invisible Hinge.

W. S. Gillespie, 103 Chambers street, New York, as putting this hinge on the market, as illustrated in the accompanying cuts. As shown in Fig. 1, it consists of two ordinary flat pin flaps and a rectangular U shaped member connecting them. The edges of the door and jamb are cut with convex curves, and the flat pin flaps



Fig. 1.—Gillespie's Invisible Hinge.

countersunk in both, where they are secured by screws in the regular way, Fig. 2. A small strip having concave grooves on its sides fits into the middle or U-shaped member, and between the convex curves of the door and jamb, to which the middle member of the hinge is screwed, as shown in Fig. 3. The strip is of the full length of the door, made of wood to correspond with the door and jamb, and is so arranged that during its movements it always keeps the crack closed against observation and draft, as shown in Figs. 3 and 4. It is suggested that the strip may be designed with a bead or other mold to carry entirely around the door and form a part of the trim. In selecting the hinge for use the central member, and consequently the central strip of wood, must be as wide as the thickness of the trim; and the trim proper should set back from the central strip as far as the strip is deep. The curves on the edges of the door, jamb and central strip have a common center with each knuckle of the

air tight and dust proof, and that by its formation and method of setting it will not sag. The point is made that in case



Fig. 2.—Central Strip, Door and Jamb.

the door should shrink the trim may be removed, and the door, as a whole, set over to the lock casing and again screwed



Fig. 3.—Hinge in Position.

to the stud, thus obviating the necessity of a "Dutchman" on the lock stile. The hinges may be used for fine cabinet work,



Fig. 4.—Appearance of Door when Closed

pianos, inside blinds, and in connection with hard-wood finish. It is remarked that the hinge may be used on secret panels in wainscoting, car interiors, and

on burglar-proof safes, where it will be impossible to determine the number or location of the hinges. It is stated that when work is required in quantity, the doors, with the intermediate strip and jamb members, can be run out and the hinges set in position at the mill, and that double-swing hinges can be made either

and polished. The 1-pound hammer is now ready for market and other sizes will be made.

The New York Tack Puller.

The accompanying illustration is of a tack puller, put on the market by Maltby,

Razor Blade. Also Razor with extra blades put up in cases; these are put up in satin-lined morocco cases, with from one to seven blades. The cases are shown in four styles; also one style of Star Safety Razor Swing Strop.

STEWART & ROMAINE MFG. COMPANY, Philadelphia, Pa.: Expansion Bolts. An



The New York Tack Puller.

with or without springs to work both ways and still be invisible when the door is closed.

The Montgomery Hammer.

Montgomery & Horton, 107 Chambers street, New York, are introducing the hammer shown in the accompanying cuts. The feature of the hammer is the V



Fig. 1.—The Montgomery Hammer.

shaped claw, which permits the drawing of nails that have been driven flush with the surface of the wood. The ends of the claw are beveled on the inside to form sharp points, so that by a blow upon the head of the hammer the claw is forced under the head of the nail. It is claimed that the nail

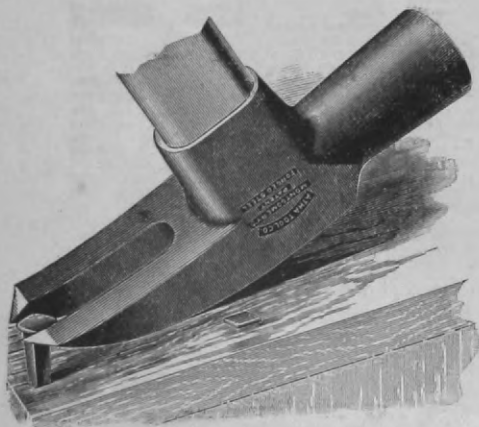


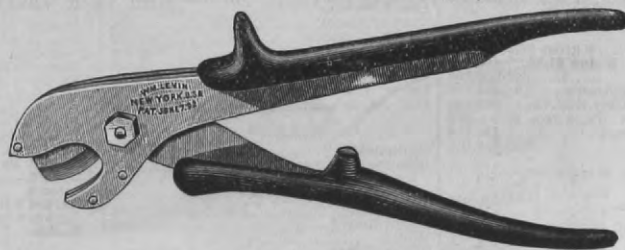
Fig. 2.—The Nail Started.

is drawn direct from the wood, straight, while the shape of the claw allows close work. The goods are made by the Atha Tool Company, forged from fine tool steel

Henley & Co., 20 Warren street, New York. It consists of a high-grade steel plate riveted on to a japanned iron handle, 6 inches in length. In operation the steel point at the top of the puller is forced under the tack, and by a downward pressure of the handle the tack is drawn. The point is made that the tempered steel point, by its peculiar construction, is stronger and more durable than forged steel, and that it is better adapted for the purpose of pulling tacks than ordinary tack claws.

The Levin Pruner No. 2.

The Levin Pruner Company, 37 Dey street, New York, are offering the pruning shear herewith illustrated. It consists of two steel plates riveted at the three points shown in the cut, between which the cutting blade is pivoted and works, while the handles are of malleable iron. A long flat steel spring concealed between the plates of the upper handle opens the pruner. In operation the blade after the cut is made passes between the plates of the lower handle and is prevented from cutting against the rivets by the stop between the handles. The point is made that the



The Levin Pruner No. 2.

pruner makes a smooth, clean cut like a knife. The manufacturers claim that though the pruner is capable of cutting through half an inch of dry oak it does not hurt the hand, jar the arm, or tire the operator in any way. The pruner is made in two sizes, No. 1, 7 inches long, No. 2, 9 inches long, and put up one each in neatly finished paper box.

Price-Lists, Circulars, &c.

UNION MFG. COMPANY, Toledo, Ohio: Woodenware. Illustrations are given of Washboards, improved Union Churns, The Best Churns, Hero Bail Churns, Dash Churns, Butter Worker, combined Butter Worker Mold and Printer; American and Western Globe Washers, Pails, &c. The illustrations cover the principal product in this line, but the manufacturers figure on any specialty that their facilities are adapted to produce.

KAMPFE BROS., New York: Star Safety Razor. A circular shows the Razor and

illustrated catalogue, containing useful information for architects, engineers, Hardware dealers, carpenters, builders, plumbers, steam heating companies, electric street railroads, electric companies, railing manufacturers, and workers in iron.

SIDNEY SHEPARD & COMPANY, Buffalo, N. Y.: Seasonable Goods. Illustrations are given of Steel Milk Cans and Milk Can stock, Strainer Pails, Milk Pails, Sprinkling Pots, Gasoline Fire Pots, Wood Cased Bath Tubs, Water Coolers, Refrigerators, Expanding Conductor, Eaves Trough Fasteners, Registers and Ventilators, Lightning Freezers, Cement-Coated Wire Nails, &c. A separate circular calls attention to a clearing sale at low prices.

L. H. MACE & Co., New York: Refrigerators, Woodenware, Children's Carriages, imported and domestic Toys. A catalogue of 80 pages shows these goods in a variety of forms and styles, with prices, including a large line of Diamond and Sideboard Refrigerators, Show Case Refrigerator, Meat Safes, Water Coolers, Freezers, Clothes Horses, Brooms, Pails, Cordage, Carpet Sweepers, Children's Carriages, &c.

GEO. N. PIERCE & Co., Buffalo, N. Y. and 23 Warren street, New York: Bird Cages, Refrigerators, Bicycles and Tricycles. A catalogue of 112 pages is devoted to these goods, of which illustrations, descriptions and prices are given. Both japanned and brass patterns of Cages are shown, and attention is called to their case goods for jobbers. Refrigerators are of hard wood, finished in antique; also, of soft wood, grained in oak and walnut colors. A specialty is made of Tricycles and Bicycles, which are sold on their merit.

THE WRIGHT SHOVEL COMPANY, Anderson, Ind.: Illustrated Price-List for 1893. Illustrations are given of the products of this company, embracing Steel Socket Shovels, Coal Shovels, Socket Spades, Locomotive and Coal Scoop Shovels, Grain Scoops, Mining Shovels, &c. The prices given cover a great variety of sizes and finishes. The company manufacture their own handles, and operate a rolling mill in the manufacture of their own Sheet Steel. All their Shovels, Scoops and Spades are warranted high carbon Steel.

Current Hardware Prices.

MARCH 22, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic..... \$ doz \$3.00, 33%
Excelsior..... \$ doz \$10.00.....50&10&25
North's..... list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

Eagle Anvils, \$ 10 9¢.....15&15&5
Peter Wright's.....11&11%
Armstrong's Mouse Hole.....10%
Am. Wrought, Horse shoe brand, 11&11%
Trenton.....10%
Wilkinson's.....10%
Moore & Barnes Mfg. Co.....33%
Anvil Vise and Drill—

Millers Falls Co., \$18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise \$3.00.....40&10%
Star.....45&50

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Common Augers and Bits.....70%
Double Spur Car Bits.....50%
Jennings' Pattern Car Bits.....45%
Jennings' Pattern Auger Bits.....60&5%
C. E. Jennings & Co., No. 10, extension
lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, set,
32 1/4 quaters, No. 5, \$5; No. 30, \$3.50, 25%
Lewis' Patent Single Twist.....50&10%
Russell Jennings Augers and Bits.....25%
Fugh's Black.....20%
Fugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Uncinatti Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).....30&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, \$18; large, \$26.....35&35&10%
Ives' No. 4, \$ doz \$80.....40%
Swan's.....40%
Stearns, No. 1, \$26; No. 2, \$18.....35&40%
Stearns' No. 2, \$48.....20%

Gimlet Bits—

Common..... \$ gross \$2.75@3.25
Diamond..... \$ doz \$1.25.....40&10%
Bee.....25&25&5%
Double Cut, Shephardson's.....45&45&10%
Double Cut, Ct. Valley Mfg. Co.....30&10%
Double Cut, Hartwell's, \$ gro., \$5.00.....25%
Double Cut, Douglass.....40&10%
Double Cut, Ives.....60&60&10%

Hollow Augers—

Ives'..... \$33%
French, Swift & Co.....\$10%
Douglass.....\$10%
Bonney's Adjustable, \$ doz \$48.....60%
Stearns'.....20&10%
Ives' Expansive, each \$4.50.....50&5%
Universal Expansive, each \$4.50.....20%
Wood's.....25&25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25&25&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Pattern Car Bits.....15&10@15&10&5%

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common..... \$ gr. 85¢@90¢
Awls, Should, Peg..... \$ gr. \$1.50@1.55
Awls, Pat. Peg..... \$ gr. 35¢@38¢
Awls, Shouldered Brad..... \$ gr. \$1.30@1.40
Awls, Handled Brad..... \$ gr. \$2.50@3.00
Awls, Handled Scratch..... \$ gr. \$4.00@4.50
Awls, Socket Scratch..... \$ doz. \$1.10@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands \$7.00..... Beveled..... \$7.50
First qual., other brands..... 6.50..... 7.00
Second quality..... 5.50..... 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1..... 3 1/4¢@4 1/4¢, No. 2, 5¢@6¢
Nos. 7 to 14..... 60&10%
Nos. 15 to 18..... 47%
Nos. 19 to 22..... 70%
Concord Axles, loose collar..... 4 1/4¢@6¢
Concord Axles, solid collar..... 5 1/4¢@7¢
National Tubular Self Oiling..... 33%
33%@33%&5%

Bag Holders—See Holders, Bag.

Balances—

Spring Balances..... 40%
No. 2000..... 20 30
Chatillon, \$ doz..... \$0.80 0.95 1.75 net
Chatillon Straight Balances..... 40%
Chatillon Circular Balances..... 50&10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel..... \$ 10 3 1/4¢
Iron, Steel Points..... \$ 10 3 1/4¢

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/4-in., \$1.80;
12-inch, \$2.00; 13 1/4-inch, \$2.50; 16-inch,
\$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 50&10@
Chatillon's No. 1..... 50&10&5%
Chatillon's No. 2..... 50%
Custer's..... 33%
Beaters—

Egg—
Dover..... \$ doz \$1.00@1.20
Duplex (Standard Co.)..... \$ doz \$1.00
Dover (Standard Co.)..... \$ doz \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ doz \$3.50
Bryant's..... \$ doz \$14.00
Double (H. & R. Mfg. Co.), \$ gro., No. 0..... \$56.00
Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50
Spiral..... \$ gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.)..... \$ gro. \$9.00
Palme, Diehl & Co.'s..... \$ gro. \$24.00
Silver & Co..... \$ doz \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.....20%

Bells—

Cow—
Common Wrought..... 60&10%
Western, Sargent's list..... 70&10%
Kentucky, "Star"..... 20&10%
Kentucky, Sargent's list..... 70&10%
Kentucky Durham..... 70&10%
Dodge, Genuine Kentucky..... 70&10%
Texas Star..... 50&10@50&10&5%

Door—

Gong, Abbe's..... 33%
Gong, Yankee..... 45&10%
Gong, Barton's..... 40&10@50%
Crane, Brooks'..... 50&10&25%
Crane, Connel's..... 10%
Lever, Sargent's..... 60&10%
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japanned..... 25&10%
Lever, R. & E. Mfg. Co.'s..... 50&10&25%
Pull, Brooks'..... 60&10&25%

Electric—

Wollensak's..... 20%
Bigelow & Dowse..... 20%

Hand—

Light Brass..... 70&10@70&10&5%
Extra Heavy..... 70%
White..... 70%
Silver Chime..... 33%
Globe Cone's Patent..... 25&10@35%

Miscellaneous—

Call..... 45&50%
Farm Bells..... 35&35%
Steel Alloy Church and School Bells..... 40%

Bellows—

Blacksmiths'..... 60&10&5@60&10&10%
Molders'..... 40&10&5@40&10&10%
Hand Bellows..... 40&10&50%

Belting, Rubber—

Common Standard..... 70&10@75&5%
Standard..... 70&5@70&10%
Extra..... 60&10@60&10&5%
N.Y.B. & P. Co., Diamond..... 60%
N.Y.B. & P. Co., Para..... 40%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..... 15%
Detroit Perfect Tire Bender..... 15%
Green River Tire Benders and Upsetters..... 20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 50&10&10%
Moore's Novelty, Mal. Iron..... 60%
Sure Grip Steel Tackle Blocks..... 25%

Bolts—Carriage, Machine, &c.—

Com. list June 10, '84..... 75&10&5@80%
Genuine Eagle, Norway, list Oct. '84..... 30&5@80&10%
Eagle, Norway, list Oct. '84..... 80&10%
Phila. pattern, list Oct. 7, '84..... 80%
R.B. & W., old list..... 70%
Machine, list Jan. 1, 1890..... 80&10%
Bolt Ends, list Jan. 1, 1890..... 80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70&10%
Cast Iron Shutter Bolts..... 70&10%
Cast Iron Chain (Sargent's list)..... 65&10%
Ives' Patent Door Bolts..... 60&10@60&10&5%
Wrought Barrel..... 70&10@75%
Wrought Square..... 70&10@75%
Wrt Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wrt Shutter, Brass Knob..... 50&50&5%
Wrt Shutter, Sargent's list..... 60&10%
Wrt Sunk Flush, Sargent's list..... 60&10%
Wrt Sunk Flush, Stanley's list..... 50&10&5%
Wrt B. K. Flush, Common..... 65&10%

Stove and Plow—

Stove..... 80&10@80&10&5%
Plow..... 60&10&50@80&10&10%
R. B. & W., Plow..... 55%

Tire—

Common, list Feb. 28, '83..... 65&65&5%
Port Chester Bolt and Nut Company..... 65%
Empire list Feb. 28, '83..... 65%
Keystone, Philadel., list Oct. '84..... 80%
Norway, Phila., list Oct. '84..... 75%
American Screw Company..... 75%
Norway, Phila., list Oct. 16, '84..... 80%
Eagle, Phila., list Oct. 16, '84..... 80%
Philadel., list Oct. 16, '84..... 80%
Bay State, list Feb. 28, '83..... 65%
R. B. & W., Philadel., list Oct. 16, '84..... 80%

Borers, Tap—

Common and Ring..... 20&10%
Ives' Tap Borers..... 33%
Enterprise Mfg. Co..... 20%
Clark's..... 33%
Borax—
Per lb..... 9%@10%
Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per lb..... 2%
Braces—

American Bit Brace and Tool Co.....
Nos. 10, 12, 20..... 60&10%
Nos. 11, 21, 24, 27..... 70&10%
Nos. 22, 23, 25..... 60&10&5%
Nos. 13, 26, 36, 37..... 70&10&5%

Barker's Imp'd Plain..... 75&10@80%
Barker's Imp'd Nickeled..... 65&10@70%
Ratchet..... 75&10@80%
Eclipse Ratchet..... 60%
Globe Jawed..... 40&40&10%
Corner Brace..... 40&40&10%
Universal, 8 in., \$2.10; 10 in..... \$2.25
Buffalo Ball..... \$1.10@1.15
Barber's..... 50&10%
Saxton's..... 50&10%
Barker's Imp. Polished..... 75&10@80%
Barker's Imp. Nickeled..... 65&10@70%
Ratchet, Polished..... 50&10@60%
Ratchet, Nickeled..... 40&10@50%
Buffalo Ball..... net, \$1.10@1.15

Bartholomew's.....
Nos. 25, 27 and 30..... 50&10@60&5%
Nos. 117, 118, 119..... 70&70&5%
Common Ball, American..... \$1.00@1.10
Fray's Genuine Spotted s..... 50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414

Ives' New Haven Novelty..... 70&70&5%
New Haven Ratchet..... 60&5@60&10%
Barber Ratchet..... 60&5@60&10%
Barber's..... 60&5%
Spotted..... 60&5@60&10%
P. S. W. Co., Peck's Patent..... 60%
Rose & Johnson..... 50%
Davis Patent..... 50&10%

Brackets—
Shelf, plain..... 65&70%
Regular, list..... 60&10@70&10%
Sargent's list..... 70&70&10%
Shelf, fancy..... 70&70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets..... 70&10%

Bright Wire Goods—See Wire.

Broilers—
Hen's Self-Inch..... 9 10 9x11
Basting..... \$ per doz. \$4.50 5.50 6.50
New Haven..... 60%
Wire Goods Co..... 65&10%
Morgan Odorless..... \$ doz. \$12.50
Queen City..... 33%
Buckets, Well—

Galvanized.....
Hill's..... \$ doz. 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad..... \$ doz. 14 qt. \$4.25@4.50
Helwig's Flat Iron Band..... \$3.75
Helwig's Wired Top..... \$ doz \$4.00

Bull Rings—See Rings, Bull.
Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Brass—
Wrought Brass..... 80&80&10%
Cast Brass, Tiebout's..... 50%
Cast Brass, Fast..... 35%
Cast Brass, Loose Joint..... 35%
Cast Iron—

Fast Joint, Narrow..... 50&10&5@50%
Fast Joint, Broad..... 50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns.....
Parliament Butts.....
Mayer's Hinges..... 75&7%
Loose Pin, Acorns..... 2%
Loose Pin, Acorns, Japanned.....
Loose Pin, Acorns, Japanned,
Plated Tips.....

Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indie Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts..... 50&50&10%

Calipers—See Compasses.
Calks, Toe—

Gautier, One Prong, Blunt..... 5%
Burke's One Prong, Blunt..... 5%
Burke's, Two Prong, Blunt..... 7%
Burke's, One Prong, Sharp..... 5%
Can Openers—See Openers, Can.

Cans, Milk—
S. S. & Co.: 5-gal., \$2.10; 8-gal., \$3.10;
10-gal., \$3.35 each..... 25%

Caps—
Percussion—
Hicks & Goldmark's and Union Metallic
Cartridge Co..... \$ 1000
F. L. Waterproof, 1-10's..... 35&37%
E. B. Trummed Edge, 1-10's..... 47&50%
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 47&50%

Musket, Waterproof, 1-10's..... 50&53%
G. D..... 27&30%
S. B. Genuine Imported..... 45%
Eley's E. B..... 56&58%
Eley's D Waterproof, Central Fire..... \$1.60

Primers—
Berdan Primers, \$1.00..... 3%
B. L. Caps (Sturtevant Shells) \$1.00..... 3%
All other Primers, \$1.20..... 3%

Cards—
Watson's Cotton, Wool, Horse and
File, list January 28, 1891..... 25%

Carpet Stretchers—
See Stretchers, Carpet.

Cartridges—
Rim Fire Cartridges..... 50&52%
Rim Fire Military..... 15&23%
Cent. Fire, Pistol and Rifle..... 25&25%
Cent. Fire, Military and Sporting..... 15&23%
Blank Cartridges, except 22 and 32 cal.,
additional 10% to above discounts.

Blank Cartridges, 22 cal., \$1.75..... 25%
Blank Cartridges, 32 cal., \$3.50..... 25%
Primed Shells and Bullets..... 15&23%
B. B. Caps, Round Ball, \$1.75..... 25%
B. B. Caps, Con. Ball, Swgd., \$2.00..... 25%

Carpet Sweepers—
See Sweepers, Carpet.

Casters—
Bed..... \$55&55&10%
Late..... \$60&60&10%
Shallow Socket..... 40&10%
Deep Socket..... 40&10%
Martin's Patent (Phoenix)..... 45&10@50&10%
Tucker's Patent, low list..... 45%
Payson's Anti-friction..... 70&70&10%
Payson's Truck..... 60&60&10%
Yale Casters, low list..... 45%
Yale, Gem..... 70%
Giant Truck Casters..... 55%
Stationary Truck Casters..... 50&10%
Socket Truck Casters..... 50&50&10%
Gwinner's Common Sense..... 45%
Gwinner's Hercules..... 45%

Cattle Leaders—
See Leaders, Cattle.

Cement—
Victor Elastic..... 5 lb pails \$ 5 50

Chain—
Trace, Wagon and Fancy Chains,
List revised Oct. 15, 1892..... 60&60&10%
American Coil, in cask lots,
3-16 1/4 5-16 3/4 7-16 1/2 9-16 1/4
\$7.60 6.30 4.45 3.80 3.65 3.50 3.40 3.35
Less than cask lots, add 4¢@4 1/2¢
German Coil, list July 12, 1892..... 60&60&10%
German Halter Chain, list July 12, 1892..... 60&60&10%
Covert Halter..... 60&23%
Covert Traces..... 35&23%
Covert Heel Chain..... 50&23%
Galvanized Pump Chain..... \$ 5 1/4¢@6¢
Onelda Halter Chain..... 60&60&5%
Jack Chain, Iron and Brass, list March
10, 1893..... 50&10%

Chalk—
White, case lots, \$ gr 50¢, small lots, 53¢
Red, case lots, \$ gr 87¢, small lots, 74¢
Blue, case lots, \$ gr 76¢, small lots, 80¢
See also Crayons

Fixtures, Grindstone—

Sargent's Patent.....	70&10
Reading Hardware Co.....	80&10

Reading Hardware Co.....	30&10
P., S. & W. Co.....	50&10

Fluting Machines—
See *Machines, Fluting.*
Fluting Scissors—
See *Scissors, Fluting.*

Fodder Scoop

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2
Hay, Manure, &c., Phila. List, 60@60&10&2

lated, see
From

Frames— Saw—
 White Vermont..... 7 gro., \$9.00 @ \$10.00
 Red, Polished and Varnished.... 7 doz.
 \$1.50, 25
Screen, Window and Door—
 Porter's Pat. Window and Door Frame,
 33 1/2 & 10

Warner's Screen Corner Irons...33 1/8@
33 1/8 & 10

Freezers, Ice Cream—
White Mountain.....60@60&51

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Granite State.....65@65&59
Arctic.....70@70&59
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Buffalo Champion.....	65¢&65¢
Shepard's Lightning.....	65¢&65¢
Scm.....	65¢
Blizzard.....	70¢
Double Action Crown.....	60¢
Crown.....	60¢
Star.....	60¢
Fearless.....	60¢&10¢

Plant	60%
Core	30%

...ero.	60¢	10¢	10¢
...oss and Pet.	80¢	10¢	10¢
...eystone, P., D. & Co., each,	\$1.50	20¢	
...standard.	60¢	60¢	5¢
...standard Double Action.	60¢	60¢	5¢
...xpert.	65¢	60¢	5¢
...odel.	60¢	60¢	5¢
...onfectioners' Machine.			50¢

Fruit and Jelly Presses

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly*.

Fry Pans—See *Pans, Fry*.

Funnels—

Ersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10¢; 2 to 5 gro., 20¢; 5 to 10 gro., 30¢.

Copper, 1 to 6 doz., 15¢; 6 to 12 doz., 20¢; over 12 doz., 25¢.

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir \$7.00

Fuse—Dis. 12¢@15¢. * 1000 ft.
Common Hemp Fuse, for dry ground, \$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground 3.85
Double Taped Fuse, for very wet gr. 4.80

Triple Taped Fuse, for very wet gr..	5.60
Small Gutta Percha Fuse for wet gr..	7.50

Gates Molasses—
 Stebbin's Pattern.....80@80¢51
 Stebbin's Gearing.....80@80¢51

Stebbin's Genuine.....	60¢	10¢
Stebbin's Tinned Ends.....	40¢	10¢

Lincoln's Pattern.....70@70&10
 Veed's.....20&10
 Boss, 8 doz.:
 No. 1, \$7; No. 2, \$8; No. 3, \$9; No. 4,
 \$10.....60&10&10

Gauges—

Marking, mortise, &c.....	60 & 10
Garrett's Surface, Center and Scratch.....	25 & 10
Stanley R. & L. Co.'s Butt and Rabbit Gauge.....	20 & 10
Garrett's Comb. Roller Gauge.....	* doz \$8.00—\$8.50
Joague & Peck's Champion Gauge—With Scale.....	* doz \$5.00

Without Scale..... doz., \$4.00
Vire Wheeler Madden & Co

Vire, Wheeler, Madden & Co.....	10
Vire, Morse's.....	25
Vire, Brown & Sharpe's.....	10@20
Vire, P., S. & W. Co.....	10&10

Gimlets—

Ball and Spike.....	50¢10¢5¢
Eureka Gimlets.....	60¢10¢

Diamond Glimlets..... 7 gr \$5.00
Double Cut, Shepardson's..... 45@45&5
Double Cut, Ives'..... 60@60&5
Double Cut, Douglass'..... 40&10

e Page's Liquid.....25@25=5
 Upton's Liquid.....85

Improved Process.....25¢/25¢/5¢
 Wood's Liquid Glue.....25¢/25¢/5¢

Glue Pots—See Pots, Glue.
Grease, Axle—
 Traser's.....Keg \$ 4¢, Pall \$ 5¢
 Traser's, in boxes.....gr \$9.50
 Dixon's Everlasting, in bxs., 1 doz 1 n
 \$1.20, 2 n \$2.00

Nixon's Everlasting... 10-lb pails, ea. 85¢
lower grades, special brands

Lower grades, special brands..... gr \$5.50@ \$7.00
 Oxline, tin boxes..... gross \$12.00
 English Coach, wooden boxes..... gross \$8.50
 English Coach, 5-m tin pails..... doz. \$3.50
 Tiger, wooden boxes..... gross \$7.00
 Tiger, 5-m tin pails..... doz \$2.85

Grindstones—

small, less than car load lots at
\$2.00 per ton @ \$10.00

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder*.

Hack Saws—See *Saws*.
Hafts, Awl—
 Sewing, Brass Fer. 7 gr.....\$1.70

Halters—

Covert's, Rope, Jute.....60&10&10&24
Covert's Rope, 7-16-in., Jute.....70&24
Covert's Rope, 1/2-in., Hemp.....50&24
Covert's Adj. Rope Halters.....40&24
Covert's Hemp Horse and Cattle Tie.....60&10&24
Covert's Jute Horse Ties.....70&24
Covert's Jute Cattle Ties.....70&10&24
Covert's Adj. Web Halters.....35&5&24
Covert's Saddlery Works Halters.....33&4
Covert's Saddlery Works Horse and Cattle Ties.....33&4

Hammers—**Handled Hammers—**

Maydole's, list Dec. 1, '85.....25&10&35¢
Buffalo Hammer Co.....50&10¢
Humason & Beckley.....50&10¢
Atha Tool Co.....50&10¢
Verree.....40&10¢
O. Hammond & Son.....40&10¢
Fayette R. Plumb.....40&10¢
Artisan's Choice, A. E. Nail.....40&10¢
Regular Y. & P. A. E. Nail.....50¢
Horseshoe Turning Hammers.....50¢
Other Hammers.....50&10¢
Cheney's Claw.....40&10¢
Cheney's Machinist's & Riveting.....50&10¢
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 & 1.75.....30&10¢
Nelson Tool Works.....40&10¢
Warner & Nobles, new list.....25&10¢
Peck, Stow & Wilcox.....35&40¢
Sargent's.....40&40&10¢

Heavy Hammers and Sledges—

8 lb and under.....\$40¢
3 to 5 lb.....75&10&75¢
Over 5 lb.....\$80¢
Wilkinson's Smiths.....10¢&11¢

Handcuffs and Leg Irons—

—See Police Goods.

Handles—

Cross-Cut Saw Handles—
Atkins', new list.....40¢
Champion.....15¢
Ely's Perfection.....\$ doz., \$3.00

Iron, Wrought or Cast—

Door or Thumb.....0 1 2 3 4
Nos.....\$0.90 1.00 1.08 1.35 1.50
Per doz.....60&10&10¢
Roggin's Latches.....\$ doz 30¢&35¢
Bronze Iron Drop Latches.....\$ doz 70¢
Jap'd Store Door Handles—Nuts, \$1.62;
Plate, \$1.10; no plate, \$0.88.....net
Barn Door, \$ doz \$1.40.....10¢&10¢
Chest and Lifting.....70&70&10¢

Wood—

Saw and Plane.....40&10&50¢
Hammer, Hatchet, Axe, &c.....40&40&5¢
Brad Axl.....\$ gr \$2.00
Hickory Firmer Chisel, ass'd.....\$ gr 4.50
Hickory Firmer Chisel, large.....\$ gr 5.00
Apple Firmer Chisel, ass'd.....\$ gr 3.00
Apple Firmer Chisel, large.....\$ gr 3.00
Socket Firmer Chisel, ass'd.....\$ gr 5.00
Socket Framing Chisel, ass'd.....\$ gr 5.00
J. B. Smith & Co.'s Pat File.....50¢
File, assorted.....\$ gr 2.75
Auger, assorted.....\$ gr 5.00
Auger, large.....\$ gr 7.00
Pat. Auger.....30&10¢
Pat. Auger, Douglass.....\$ set \$1.25
Pat. Auger, Swan's.....\$ set \$1.00
Hoe, Rake, Shovel, &c.....60&60&5¢

Hangers—

Barn Door, old patterns.....70&70&5¢
Barn Door, New England.....70&70&5¢
Samson Steel Anti-Friction.....55¢
Orleans Steel.....55¢
Hamilton Wrought Steel Track.....60&10¢
Champion.....55¢
Climax Anti-Friction.....55¢
Zenith for Wood Track.....55¢
Sterling.....50&10&60¢
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....50¢
Kiddier's.....60&60&10¢
Boss.....60&10&60&10¢
Best Anti-Friction.....60&10&5¢
Duplex (Wood Track).....60&10&5¢
Terry's Modern.....50&10&50&10¢
Terry's Ideal.....50&10&50&10¢
Terry's Solid.....50&10&60¢
Terry's Shield.....50&10&60¢
Terry's Wrought Single Strap.....50&10¢
Cronk's Patent, Steel Covered.....50&10¢
Carrier Steel Anti-Friction.....50&10¢
Richards.....30&30&10¢
Lane's New Standard.....50&50&5¢
Lane's Standard.....50&50&50&10¢
Lane's Parlor.....40¢
Warner's Pat.....20&10&10¢
Stearns' Anti-Friction.....20&10&10¢
Stearns' Challenge.....25&10&10¢
Cincinnati, Nos. 1, \$2.25; 3, \$2.60; 4, \$2.60.
Paragon, Nos. 5, 6, 7 and 8.....20&10¢
Crescent.....40&10&50¢
Nickel, Steel, Nos. 0, \$2.50; 1, \$2.00; 2, \$1.50.
Chicago Anti-Friction.....30&10¢
Star.....40&10&40&10¢
Barry.....50¢
Interstate.....50&10&60¢
Pendulum, Payson's.....40&40&10¢
Woody.....50&10¢
Economy, \$6.00.....50&10¢

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.
Blood's.....40 & 10
Hunt's.....50&5¢
Hurd's.....40 & 10
Mann's.....50&5¢
Peck's.....40 & 10
Underhill's.....40 & 10
Buffalo Hammer Co.....50&5¢
Fayette R. Plumb.....50&5¢
C. Hammond & Son.....50&5¢
Kelly's.....50&5¢
Sargent's & Co.....50&5¢
P. S. & W. Co.....50&5¢
Ten Eyck Edge Tool Co.....10¢
Collins.....50&50&5¢
Schulte, Lohoff & Co.....50&50&5¢

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Parker.....75&2¢
Huffer.....50¢
Clark's, Nos. 1, 3, 5, 40 and 50, 80&80&5¢
Clark's Mortise Gravity.....50¢
Sargent's, Nos. 1, 3, 5, 11, 12, 13, 75&10¢
Reading's Gravity.....75&10¢&75&10¢
Shepard's.....75&10¢
Noiseless.....80¢
Niagara.....80¢
Buffalo.....80¢
Clark's Genuine Pattern.....80¢
O. S., Lull & Porter.....75&10¢
Acme, Lull & Porter.....75¢
Queen City Reversible.....70&10&5¢
Clark's Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....75&10&2¢
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....10¢

Gate Hinges—

Western.....\$ doz \$4.20, 60&60&10¢
N. E.....\$ doz \$7.80, 60&60&10¢
N. E. Reversible \$ doz.....\$5.60, 60&60&10¢
Clark's, Nos. 1, 2, 3.....60&10&5¢
N. Y. State.....\$ doz \$4.90, 60&60&10¢
Automatic.....\$ doz \$12.50, 50¢
Shepard's.....60&10&5¢

Spring Hinges—

Geer's Spring and Blank Butts.....40¢
Union Spring Hinge Co.'s list, March, 1886.....25¢
Barker's Double Acting.....25¢
Union Mfg. Co.....25¢
Bommer's.....30¢
Buckman's.....15&20¢
Chicago.....30¢
Bardsley's Patent Checking.....15¢
Acme.....25&10¢
U. S.....25&10¢
Empire and Crown.....20¢
Hero and Monarch.....55¢
American, Gem and Star.....20¢
Oxford.....20¢
Royal.....60¢
Reliable.....60¢
Champion.....60¢
No. 10 Matchless.....60¢
No. 25 Unbreakable.....60¢
J. G. C. Covered, \$ gro., \$30.....50&5¢
Samson.....60&60&10¢
Wiles', No. 1, \$ gro., \$16; No. 2, \$18.....\$13
Devore, No. 1.....\$ gro., \$13.00
Rex.....\$ gro., \$13.00
Freeport.....\$ gro., \$12.00
Stearns' Noiseless Floor Hinge, \$ set, \$5.00.....20&10&30¢

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10&50&10&5¢
Corrugated Strap and T.....50&10&5¢
Screw Hook and.....6 to 12 in., \$ 3¢
Strap.....22 to 36 in., \$ 3¢
Screw Hook and Eye.....1/4 in., \$ 7 1/2¢
1/2 in., \$ 5 1/2¢
3/4 in., \$ 4 1/2¢
Rolled Blind Hinges, Nos. 32 and 34.....50&10¢
Rolled Blind Hinges, Nos. 232 and 234.....55&10¢
Rolled Plate.....70&10¢
Rolled Raised.....70&10¢
Plate Hinges { 8, 10 & 12 in., \$ 5¢
" Providence " over 12 in., \$ 4¢

Hoes—**Eye—**

D. & H. Scovill.....20¢
Lane's Crescent, Planters' Pattern.....45&5¢
Lane's Razor Blade, Scovill Pattern.....30¢
Maynard, S. & O. Pat.....45&5¢
Sandusky Tool Co., S. & O. Pat.....70&70¢
Am. Axe and Tool Co., S. & O. Pat.....5¢
Chattanooga Tool Co., S. & O. Pat.....60¢
Grub.....60&10¢
80&10¢

Handled—

Garden, Mortar, &c.....70&70&5&2¢
Planter's Cotton, &c.....70&70&5&2¢
Warren Hoe.....60&60&5¢
Magic.....\$ doz \$4.00

Hog Rings and Ringers—

See Rings and Ringers.

Holisting Apparatus—

See Machines, Holisting.

Hollow-Ware—

See Ware, Hollow.

Holders—**Bag—**

Sprengle's Pat.....\$ doz \$18.....60¢

Bit—

Extension.....40&40&10¢
Barber's, \$ doz \$15.00.....40&40&10¢
Ives, \$ doz \$20.00.....60&5&60&10¢
Diagonal.....\$ doz \$24.00, 40¢
Angular.....\$ doz \$24.00, 40&5¢

File and Tool—

Balz Pat.....\$ doz \$4.00, 25¢
Nicholson File Holders.....20¢

Hooks—**Cast Iron—**

Bird Cage, Sargent's list.....60&10&10¢
Bird Cage, Reading.....60&10&10¢
Clothes Line, Sargent's list.....60&10&10¢

Clothes Line, Reading list.....60&10&60&10&10¢
Ceiling, Sargent's list.....55&10&10¢
Harness, Reading list.....55&10&60&10&10¢
Coat and Hat, Sargent's list.....55&10&60&10¢
Coat and Hat, Reading.....50&10&50&10&10¢

Wrought Iron—

Cotton.....\$ doz \$1.25
Cotton Pat. (N. Y. Mallet and Handle Wks.).....30¢
Tassel and Picture T. & S. Mfg. Co.....50¢
Wrought Staples, Hooks, &c.
See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60&60&10¢
Wire Coat and Hat, Miles, list April, 1886.....60&60&10¢
Indestructible Coat and Hat.....45&45&5¢
Wire Grass.....60&60&10¢
Handy Hand Co.....60&10&60¢
Steady Ceiling Hooks.....50&10&60¢
Belts, Coat and Hat.....80&15&80&20¢
Williamson's Bird Cage Hooks, list April, 1892.....40¢
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25
Nolin's Grass.....\$ doz \$2.25
Bush.....55&60¢
Whiffletree—Patent.....55¢
Hooks and Eyes—Malleable Iron.....70&70&10¢
Hooks and Eyes—Brass.....60&10&10¢
Fish Hooks, American.....50¢
Bench Hooks—See Bench Stops.

Horse Nails—See Nails, Horse**Horse Shoes—**

See Shoes, Horse.

Hose, Rubber—

Competition.....75&75&10&5¢
Standard.....60&10&10¢&70&10¢
Extra.....60&60&10¢
N. Y. B. & P. Co. Para.....25&5¢
N. Y. B. & P. Co. Extra.....40&40&5¢
N. Y. B. & P. Co., Dundee.....50&10&60¢

Huskers—

Blair's Adjustable.....\$ gr \$8.00
Blair's Adjustable Clipper.....\$ gr 7.00
Hubbard's Solid Steel.....\$ gr 4.50

Indurated Fiber Ware—

See Ware, Indurated Fiber.

Irons.**Sad—**

From 4 to 10, at factory.....\$ 100 b.
Self-Heating.....\$2.30 to \$2.40
Self-Heating Tailors'.....\$ doz \$8.00
Enterprise Irons, list Jan. 17, 1893.....30¢
Enterprise Star Irons, list Jan. 17, '93.....30¢
Iron.....60&10&60&10&5¢
Ideal Iron, new list.....50&10&50&10&10¢
Salamander Irons.....25¢
B. B. Sad Irons, &c.....3&3¢
Chinese Laundry (N. E. Butt Co.), 8 1/2¢, 15¢
New England.....5¢, 20&20&5¢
Mahony's Troy Pol. Irons.....25¢
Sensible, list Jan. 91.....50&10&5¢
Sentinel Tailor's Irons.....33¢
National Self-Heating.....30¢

Soldering—

Soldering Coppers.....\$ 19 to \$21¢
Covert's Adjustable, list Jan. 1, 1886.....35&2¢
Tinker's Dread.....\$ doz \$1.75; \$ gro. \$18

Pinking—

Pinking Irons, \$ doz., 55&60¢.

Jack Screws—See Screws.**Jacks, Wagon—**

Daisy.....33 1/2¢
Victory.....33 1/2¢
Lockport.....40¢

Kettles—

Brass, Spun, Plain, list Jan. 1, '91.....25&5¢
Brass, Spun, Plid. W. M. list Jan. 1, '91.....20¢
Jordan's A. A. Butchers', list.....\$ 21¢
Enameled and Tea—See Ware, Hollow.

Keys—

Lock, Ass'n list Dec. 30, 1886.....65&10¢&70¢
Eagle, Cabinet, &c.....33 1/2¢&2¢
Hotchkiss' Brass Blanks.....40¢
Hotchkiss' Copper and Tinned.....40¢
Hotchkiss' Pad and Cab.....35¢
Wollensak Tinned.....60&10¢

Knife Sharpeners—

See Sharpeners, Knife.

Knives—**Butcher, Shoe, &c.**

Wilson's Butcher Knives, list Dec 8, 1890.....25¢
Ames' Butcher Knives.....25¢
Foster Bros' Butcher, &c.....40¢
Jordan's A. A. Butchers', list.....40&10¢
Nichols' Butcher Knives.....40&10¢
W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.80, &c.
Ames' Shoe Knives.....20&25¢
Ames' Bread Knives, \$ doz \$1.50, 15&20¢
Moran's Shoe and Bread.....20&20&10¢
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10¢
Wadsworth's.....25&25&10¢

Drawing—

Wetherby.....75&75&10&5¢
P. S. & W.....75&75&10&5¢
New Haven.....60&10&60&10&5¢
Merrill.....75&75&10&5¢
Douglass.....15&10&25¢
Watrous.....15&10&25¢

L. & I. J. White.....20&25¢
Bradley's.....25¢
Adjustable Handle.....25&33 1/2¢
Wilkinson's Folding.....25&25&5¢

Hay and Straw—

Lighting, from jobbers.....\$3.00 to \$9.00
Wadsworth's.....40&7 1/2¢&40&10¢
Carter's Needle.....\$ doz \$11.00 to \$11.50
Heath's.....\$ doz \$13.00 to \$13.50
Nolin's Hay.....\$ doz \$7.00 to \$8.00

Mincing—

Am. (2d quality), \$ gr., 1 blade, \$7
2 blades, \$12; 3 blades, \$18.....net
Lothrop's.....20&10¢
Smith's, \$ doz., Single, \$2; Double \$3
Knapp & Cowles.....60&10&60¢
Buffalo Adjustable.....\$ doz \$3.00, 33 1/2¢

Knobs—

Door, Mineral.....60&65¢
Door, Por. Jap'd.....70&75¢
Door, Por. Nickel.....\$2.00 to \$2.35
Door, Por. Plated Nickel.....\$2.00 to \$2.25
Drawer, Porcelain.....60&10&60&10&10¢
Hemacite Door Knobs.....40&10&50¢
Yale & Towne Wood, list Dec., 1886.....40¢
Base, Rubber Tip.....70&10&5¢
Picture, Jap'd.....60&10&10&70¢
Picture, Sargent's.....70&10¢
Picture, Hemacite.....35&5¢
Shutter, Porcelain.....65&15¢
Carriage, Jap.....\$ gro 80¢, 60&10¢
Bardsley's Wood Door, Shutter, &c.....15¢

Ladders.

Davies Extension and Single.....20&5¢

Ladies—

Melting, Sargent's.....60&60&5¢
Melting, Reading.....35&10¢
Melting, P. S. & W.....35&10&40¢
Melting, Warner's.....30¢

Lanterns—**Tubular—**

Regular, with Guard.....\$ doz \$3.50
Side Lift, with Guard.....\$ doz \$3.75
Square Lift, with Guard.....\$ doz \$4.35
Anti-Friction, with Guard.....\$ doz \$4.50
Brass Plated, Sq. Lift, Guard.....\$ doz \$5.50
Cop. Plated, Sq. Lift, Guard.....\$ doz \$5.50

Bull's Eye Police—

2 1/2-inch regular.....\$ doz \$3.60
3-inch regular.....\$ doz \$3.90
2 1/2-inch flash light.....\$ doz \$4.00
3-inch flash light.....\$ doz \$4.50

Lawn Mowers—

See Mowers, Lawn.

Leaders, Cattle—

Humason, Beckley & Co.'s.....70¢
Sargent's.....70&10&70&10&10¢
Hotchkiss.....30¢
Peck, Stow & W. Co.....60&10¢

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60¢
Class 3 and 4, Bronze Metal.....50¢
Class 3 and 4, Brass.....50¢
Skylight Lifters.....35¢
Reiter's, list Feb. 20, 1891
Bronzed Iron Rods.....60&60&10¢
Brass, Real Bronze or Nickel Plate.....30¢
Excelsior.....50&10&25¢
Shaw's.....60&10¢
Payson's
Universal.....60¢
Solid Grip.....60&10&60&10&10¢
Imperial.....60&10¢

Lines—

Cotton and Linen Fish.....50¢
Chalk.....60¢
Mason's Linen, 8 1/2 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....25¢
Cotton Chalk.....55¢
Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50.....50¢
Silver Lake, Braided No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50; No. 4, \$8.00.....25¢
Mason's Linen, No. 3 1/2, \$1.50; No. 4, \$2.00; No. 4 1/2, \$2.50.....45¢
Mason's Colored Cotton.....15¢
Wire Clothes, Nos. 18 19 20.....\$3.50 \$3.00 \$2.50
Ventilator Cord, Samson Braided, White or Drab Cotton, \$ doz \$7.50, 20¢
Ossawa Mills, Chalk, Twisted, 60¢;
Chalk, Soft Braided, 50¢ Chalk, Braided, 25¢.

Links, Open—

Terry's—per gro.:
Nos.....1 2 3 4
\$6.00 8.00 12.00 16.00

Locks, &c.—**Cabinet—**

Eagle, Gaylord Par. } list March, '84, rev.
ker and Corbin } Jan. 1, '85, \$3.95
Deitz, Nos. 36 to 39.....40¢
Deitz, Nos. 51 to 63.....40¢
Deitz, Nos. 87 to 98.....30¢
Champion Night Latches.....40¢
Barnes Mfg. Co.....40&40&10¢
Eagle and Corbin Trunk.....25&10¢
Champion Cab. and Combin.....33 1/2¢
Yale.....net price
Romer's.....25¢

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar. 20, 1889.....65&10&70¢
Mallory, Wheeler & Co., list July, '88.....lower net prices
Sargent & Co., list Aug. 1, '88.....often made
Branford Lock Works.....made

Duck, 12 1/2-lb kegs	9.75
Duck 6 1/4 lb kegs.....	1.50

Presses—

Fruit and Jelly—	
Enterprise Mfg. Co.	25%
Hemis.	doz \$3.50
Shepard's Queen City.	40%
Silver & Co.	doz \$2.75

Pruning Hooks and Shears—See Shears.**Pullers Nail—**

Scranton.	doz., \$18.00, 33%
Curtis Hammer.	doz., \$9.00
Giant, No. 1.	doz., \$18.00, 10%
Giant, No. 2.	doz., \$15.00, 10%
Pelican.	doz., \$20.00, 25%
Calipse.	Each, \$2.00, net
Economy.	doz., \$6.00

Pulleys—

Hot House, Awning, &c.	66% @ 70%
Japanese Screw.	60 & 10 @ 10%
Grass Screw.	60 & 10 @ 10%
Japanese Siphon.	60 & 10 @ 10%
Japanese Clothes Line.	60 & 10 @ 10%
Moore's Sash, Anti-Friction.	50%
Hay Fork, Solid Eye, 4.00; Swivel.	\$4.50
Hay Fork, "Anti-Friction," 5 in. solid.	\$5.70
Hay Fork, "F" Common and Patent.	50%
Bushed.	20%
Hay Fork, Tarbox Pat. Iron.	20%
Hay Fork, Reed's Self-Lubricating.	60%
Shade Rack.	45%
Tackle Blocks—See Blocks.	70%
Moore's Anti-Friction 5 in. Wheel.	40%
doz., \$12.00.	40%
Shepard's Niagara, No. 25.	80%
Sash (Auger Mortise).	80%
Common Sense.	60%
Empire.	60%
Ideal, Nos. 2, 4, 10, 16.	60% less 1¢
Acme.	doz net.
Star.	doz net.
On bbl. lots extra 5%.	
Ideal, Nos. 25 and 55.	doz. 22¢ net.

Pumps—

Cistern, Best Makers.	60 & 60 @ 10%
Pitcher Spout, Best Makers.	67% @ 70%
Pitcher Spout, Cheaper G'ds.	75% @ 10%

Punches—

Saddler's or Drive, good.	doz., 60 @ 65%
Bemis & Call Co.'s Cast Steel Drive.	50 & 5%
Bemis & Call Co.'s Springfield Socket.	50 & 5%
Spring, good quality.	doz., \$2.50 @ \$2.60
Spring, Leach's Pat.	15%
Bemis & Call Co.'s Spring and Check.	40%
Solid Timmers, P., S. & W. Co.	doz., \$1.44
Timmers' Hollow Punches, P., S. & W. Co.	20 & 2%
Rice Hand Punches.	15%
Avery's Revolving.	40%
Avery's Sawset and Punch—See Sawsets	

Rail—

Sliding Door, Wrt Brass.	doz., 35¢, 40%
Sliding Door, Bronze Iron.	doz., 40%
Sliding Door, Iron, Painted.	doz., 40%
Barn Door, Light, In.	doz., 35%
Per 100 feet.	\$2.00 2.50 3.10, 10%
G. D. for N. E. Hangers.	
Small. Med. Large.	
Per 100 feet.	\$3.15 2.70 3.25 Net
Terry's Steel Rail.	doz., \$1.00
Victor Track Bar.	doz., \$1.00
Carrier, double braced, Steel Rail.	doz., \$1.00
foot.	30¢ @ 40%
Moore's Wrought Iron.	25%
Moody Steel Rail	doz., \$1.00

Rakes—

Cast Steel, Association & Co.	70 & 70 @ 5 & 2%
Cast Steel, outside g'ds.	70 & 70 @ 5 & 2%
Malleable.	70 & 70 @ 5 & 2%
Gibbs' Lawn Rake.	doz., \$4.00
Gibbs' Canton Lawn Rake.	doz., \$3.75
Gibbs' Acme Lawn Rake.	doz., \$4.75
Gibbs' Favorite Lawn Rake.	doz., \$3.90
Gibbs' Crown Lawn Rake, No. 1.	doz., \$4.90; No. 2, \$5.40
Onelda Lawn Rake.	doz., \$6.00
Fort Madison Prize Bow Brace and	Feetless.
Fort Madison Steel Tooth Lawn Rake.	\$6.00.

Razors—

J. R. Torrey Razor Co.	20%
Wostenholm and Butcher, \$10 to £.	10%
Jordan's A.A.L. new list.	Net
Jordan's Old Faithful, new list.	Net
Galvanic.	doz., \$15.00
Electric Cutlery Co.	Net
Campbell Cutlery Co.	Net

Razor Straps—**See Straps, Razor.****Rings and Ringers—**

Bull Rings—	
Union Nut Co.	55%
Sargent's.	75 & 10 @ 10%
Hotchkiss' low list.	30%
Humason, Beckley & Co.'s.	70 & 10%
Peck, Stow & W. Co.'s.	50 & 10 @ 50 & 10%
Elrich Hd. Co., White Metal, low list.	50 & 60 @ 10%

Hog—

Top of the Hill Ringers.	doz \$2.00
Top of the Hill Ringers.	doz \$1.25
Hill's Improved Ringers.	doz \$1.25
Hill's Old Style Ringers.	doz \$1.12 1/2
Hill's Tongues.	doz \$3.00
Hill's Rings.	doz bxs \$1.00
Perfect Ringers.	doz bxs \$1.50
Perfect Ringers.	doz \$2.15 @ \$1.50
Blair's Hog Ringers.	doz \$2.00
Blair's Hog Ringers.	doz 90¢ @ \$1.00
Champion Ringers.	doz \$2.00
Champion Ringers, Double.	doz \$2.25
Brown's Ringers.	doz \$2.00
Brown's Ringers.	doz \$1.15 @ \$1.25
Electric Hog Ringers.	doz boxes \$1.50
Electric Hog Ringers.	doz \$2.00
Major Ringers.	doz \$1.25
Major Ringers.	doz \$2.00

Rivets and Burrs—

Iron, list Nov. 17, '87.	60 & 10 @ —
Copper.	60 & 60 @ 10%
Coppered Iron, Bettina Brand.	40%

Rivet Sets—See Sets.**Roasting and Baking**

Pans—See Pans, Roasting and Baking.	
Rods—	
Stair, Brass.	25 @ 30%
Stair, Black Wrought.	doz \$4.00

Rollers—

Barn Door, Sargent's list.	60 & 10 @ 10%
Moore's Anti-Friction.	55%
Union Barn Door Roller.	70%
Thompson Mfg. Co.'s Lawn Rollers.	30%

Rope—

The following prices are f.o.b. New York or factory, and are shaded 1/4 @ 1/2 on large lots; terms, 1% for cash.	
Manila, 7-16 in. diam. and larger.	doz 9%
Manila, 3/4 in.	doz 10%
Manila, 1/2 and 5-16 in.	doz 10%
Manila, Tarred Rope.	doz 9%
Manila, Hay Rope.	doz 8%
Sisal.	doz 8%
Sisal, 7-16 inch and larger.	doz 8%
Sisal.	doz 8%
Sisal, 1/2 and 5-16 in.	doz 8%
Sisal, Hay Rope.	doz 8%
Sisal, Tarred Rope.	doz 7%
Sisal, Medium Lath Yarn.	doz 7%
New Zealand, 7-16 in. and larger.	doz 7%
New Zealand.	doz 7%
New Zealand, 1/2 and 5-16 inch.	doz 8%
New Zealand, Hay Rope.	doz 7%
New Zealand, Tarred Rope.	doz 6%
Cotton Rope.	doz 13% @ 16%
Jute Rope.	doz 6% @ 7%

Wire—

List February, 1892. All kinds.	45%
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Rules—

Boxwood.	80 & 10 @ 10%
Ivory.	50 & 10%
Street's Steel Rules and Straight	Edges.
	25 & 10%

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—****See Paper and Cloth.****Sash Cord—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—****See Weights, Sash.****Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.****Saws—**

The following prices are generally cut by jobbers.	
Disston's Circular.	45 @ 45 & 5%
Disston's Cross Cut.	40 @ 40 & 5%
Disston's Hand.	25%
Woodrough & McLean.	
Hand, Panel and Rip.	30 @ 30 & 5%
Narrow Champion Cross Cuts with	Handles, 1/2 foot.
	18 @ 20%
Champion Thin Back Cross Cuts,	1/2 foot.
	28 @ 28%
Champion Extra Thin Back Cross	Cuts, 1/2 foot.
	29 @ 31%
One Man Champion Cross Cuts,	1/2 foot.
	37 @ 40%
Wheeler, Madden & Clemson Mfg. Co.	
Hand, Panel and Rip.	35 @ 35 & 5%
Narrow Champion Cross Cuts with	Handles, 1/2 foot.
	18 @ 20%
Champion Thin Back Cross Cuts,	1/2 foot.
	28 @ 28%
Champion Extra Thin Back Cross	Cuts, 1/2 foot.
	29 @ 31%
One Man Champion Cross Cuts,	1/2 foot.
	37 @ 39%

Atkins' Circular.

Atkins' Cross Cut, new list.	50%
Atkins' Muley, Mill and Drag.	40%
Atkins' One-Man Saw.	40%
Peace Circular and Mill.	45 @ 45 & 5%
Peace Hand Panel and Rip.	25 @ 25 & 5%
Peace Cross Cuts.	45 @ 45 & 5%
Richardson's Circular and Mill.	45 @ 45 & 5%
Richardson's Cross Cut.	45 @ 45 & 5%
Richardson's Hand, &c.	25 @ 25 & 5%
C. E. Jennings & Co.'s brand.	25%

Hack Saws—

Griffin's, complete.	40 & 10 @ 50
Griffin's Hack Saw Blades.	40 & 10 @ 50
Star Hack Saws and Blades.	25%
Eureka and Crescent.	25%

Scroll—

Lester, complete, \$10.00.	25%
Rogers, complete, \$4.00.	25%
Barnes Builders' and Cab Makers'.	\$15.25
Barnes' Scroll Saw Blades.	35%

Saw Frames—**See Frames, Saw.****Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality.	doz \$18.00 @ \$19.00
Hatch, Tea, No. 161.	doz \$6.50 @ \$7.00
Union Platform, Plain.	\$2.10 @ \$2.20
Union Platform, Striped.	\$2.40 @ \$2.50
Chatillon's Grocers' Trip Scales.	50%
Chatillon's Eureka.	25%
Chatillon's Favorite.	40%
Family, Turnbills.	30 @ 30 & 10%
Riehle Bros' Platform.	40%

Scale Beams—**See Beams, Scale.****Scissors, Fluting.****Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)	\$8.00.
Box, 1 Handle.	doz \$2.25 @ \$2.50
Box, 2 Handle.	doz \$3.00 @ \$3.25
Defiance Box and Ship.	20 & 10%
Foot.	50 & 10 @ 60%
Ship, Common.	doz \$3.50 net
Ship, R. I. Tool Co.	10%

Screen Window and Door**Frames—See Frames****Screw Drivers—****See Drivers, Screw.****Screws—****Bench and Hand—**

Bench, Iron.	55 & 10 @ 55 & 10%
Bench, Wood, Beech.	doz \$2.25
Bench, Wood, Hickory.	20 & 10%
Hand, Wood.	25 & 10 @ 25 & 10%
Hand, Grand Rapids.	35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890.	80 @ 80 & 10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.	80 @ 80 & 5%
Hand Rail, Sargent's.	70 & 10%
Hand Rail, H. & B. Mfg. Co.	70 & 10 @ 75%
Hand Rail, Am. Screw Co.	75%

Jack Screws—

Jack Screws, Millers Falls list.	50 @ 50 & 10%
Jack Screws, P. S. & W.	35%
Jack Screws, Sargent.	70%
Jack Screws, Stearns.	40 @ 40 & 10%

Cork—

Humason & Beckley Mfg. Co.	40 & 10 @ 50%
Williamson's.	33% @ 33% & 5%
Detroit Cork Screw Co.	33%

Machine—

Flat Head Iron.	65%
Round Head Iron.	60%

Wood—

List January 1, 1891.	
Flat Head Iron.	70%
Round Head Iron.	65%
Flat Head Brass.	70%
Round Head Brass.	65%
Flat Head Bronze.	70%
Round Head Bronze.	65%
Rogers' Drive Screws.	82%

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain.	40 & 5 @ 40 & 10%
Grass.	40 & 10 @ 50%

Scythe Snaths—**See Snaths, Scythe.****Sets—**

Awl and Tool—	
Alken's Sets, Awls and Tools.	
No. 20.	doz \$10.00.
Frax Add. Tool Hdls., Nos. 1, \$12; 2, \$18.	
3, \$12; 4, \$18.	
Millers Falls Add. Tool Hdls.	45%
Nos. 1, \$12; 2, \$18.	25%
Henry's Combination Haft.	doz \$6.50
Stanley's Excelsior.	
No. 1, \$7.50; No. 2, \$4.00; No. 3,	\$5.50.
Common B. Setts.	30 & 10%
No. 42, \$10.50; No. 43, \$12.50.	70 & 10 @ 5%

Square.

Square.	gr. \$4.00 @ \$4.25
Round.	gr. \$3.25
Canon's Diamond Point.	gr. \$12, 20%

Nail—

Regular list.	70%
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Rivet—

Stillman's Genuine.	doz \$5.00 @ 7.75.
Stillman's Pattern, Hand.	doz \$3.25.
Cross Cut, \$5.25.	65%
Common Lever.	doz \$2.00, 45 @ 60%
Morrill's No. 1, \$14.00.	40 @ 20%
No. 11, \$15.00.	40 @ 20%
Nos. 3 & 4, Cross Cut, \$22.50.	40 @ 20%
No. 5, Mill, \$30.00.	40 @ 20%
No. 10, \$15.00.	40 @ 20%
Leach's, No. 0, \$8.00; No. 1, \$15.	15 @ 20%
Nash's.	20 & 10 @ 20 & 10%
Hammer, Hotchkiss.	\$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.	30 & 5%

Bemis & Call Co.'s Lever and Spring

Hammer.	30 & 5%
Bemis & Call Co.'s Plate.	10%
Bemis & Call Co.'s Cross Cut.	12%
Alken's Genuine.	\$13.00, 50 & 10 @ 60%
Alken's Imitation.	\$7.00, 55 & 5%
Bar's Pat. Lever.	20%
Disston's Star.	25%
Leopold.	40 & 10 @ 50%
Atkin's Lever.	doz No. 1, \$6.00
Atkin's Criterion.	doz No. 1, \$6.00
Croissant (Keller), No. 1, \$15.00; No. 2,	\$24.00.
Avery's Saw, Lever and Punch.	40 & 10%
Kohler's Royal.	doz \$7.00
Kohler's Giant Royal.	doz \$12.00
Crescent.	doz \$3.00
Lloyd's Acme.	doz \$15, 40 & 10%
Taintor Positive.	doz \$18, 50%

Sharpeners, Knife—

Applewold Handles.	doz. \$6.00, 40%
Rosewood or Cocobola.	doz. \$9.00 40%

Shaves, Spoke—

Iron.	45%
Wood.	30%
Bailey's (Stanley R. & L. Co.).	40 & 10%
Stearns.	30 & 10%
Cincinnati.	25 & 10%
Goodell's	doz \$9.00.

Shears—

American (Cast) Iron.	75 & 10 @ 75 & 10%
Barnard's Lamp Trimmers.	doz. \$3.75

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	50¢
Fitch's (Bristol)	50¢
Hotchkiss	10¢
Andrews	50¢
Sargent's Patent Guarded	70¢
German, new list	50¢
Covert, New Patent	50¢
Covert, New R. E.	50¢
Covered Spring	50¢
Covert's Saddlery Works' Triumph	35¢
John Protz Snaps	75¢

Snaths. Scythe

List	50¢
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Soldering IronsSee *irons, Soldering.***Spittoons, Cuspidors, &c.**

Standard Fiberware—

Cuspidors, 8½-inch, # doz., No. 5, \$3; No. 5X, \$2.

Spittoons, Daisey, 8-inch, No. 1, 4; 10 and 11 inch, \$6.

Spoke ShavesSee *Shaves, Spoke.***Spoke Trimmers**See *Trimmers, Spoke.***Spoons and Forks**

Tinned Iron—

Basting, Cen. Stamp, Co.'s list.

Solid Table and Tea, Cen. Stamp, Co.'s list.

Buffalo, S. S. & Co.

Silver Plated—

months or 5¢ cash 30 days:

Meriden Brit. Co., Rogers.

C. Rogers & Bros.

Rogers & Bros.

Reed & Barton.

Wm. Rogers Mfg. Co.

Simpson, Hall, Miller & Co.

Holmes & Edwards Silver Co.

L. Boardman & Son.

Miscellaneous—

Holmes & Edwards Silver Co.

No. 67 Mexican Silver.

No. 30 Silver Metal.

No. 24 German Silver.

No. 60 Nickel Silver.

No. 49 Nickel Silver.

Wm. Rogers Mfg. Co.

Rogers' Silver Metal.

18½ Rogers' German Silver.

22½ Rogers' Nickel Silver.

German Silver.

German Silver, Hall & Elton.

Nickel Silver.

Britannia.

Boardman's Nickel Silver.

1891.

Boardman's Britannia Spoons, case lots.

Springs—

Door—

Torrey's Rod, 39 in.

Warner's No. 1.

Gem (Coll), list April 19, 1886.

Star (Coll), list April 19, 1886.

Victor (Coll).

Champion (Coll).

Cowell's, No. 1.

Easy.

Rubber, complete.

Hercules.

Carriage, Wagon, &c.

Alliptic, Concord, Platform and Half Scroll.

Our's Bolster Springs.

Squares—

Steel and Iron.

Nickel-Plated.

Try Square and T Bevels.

Diston's Try Square and T Bevels.

Winterbottom's Try and Miter.

Barrett's Micrometer Caliper Squares.

Avery's Flush Bevel Squares.

Avery's Bevel Protractor.

Squeezers—

Fodder—

Blair's.

Blair's Climax.

Lemon—

Orcelain Lined, No. 1.

Wood, No. 2.

Wood, Common.

Dunlap's Improved.

Sammis.

Jennings' Star.

The Boss.

Dean's.

Little Giant.

King.

Hotchkiss Straight Flash.

Silver & Co., Glass.

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ¼ in. and larger.

Barbed Blind, ¼ in.

Fence Staples, Galvanized.

Fence Staples, Plain.

Grand Crossing Tack Co.'s list.

Steelyards

Stocks and Dies—

Blacksmith's:

Waterford Goods.

Butterfield's Goods.

Lightning Screw Plate.

Eccles' New Screw Plates.

Reversible Ratchet.

Gardner.

Green River.

Stops, Bench—

Morrell's, # doz., Nos. 1, \$9.50; 2, \$12.00.

Hotchkiss's.

Watson's, No. 1, \$10; No. 2, \$9.

Stones, Grind—See Grindstones.**Scythe Stones—**

Pike Mfg. Co., list April, 1892.

Cleveland Stone Co., list Nov. 1892.

Oil Stones, &c.—

Pike Mfg. Co.:

Hindustan No. 1.

Sand Stone.

Turkey Oil Stone, 4 to 8 in.

Turkey Slips.

Washita Stone, Extra.

Washita Stone, No. 2.

Washita Slips, Extra.

Washita Slips, No. 1.

Arkansas Stone, No. 1, 8 to 10 in.

Arkansas Stone, No. 1, 5½ to 8 in.

Lake Superior.

Lake Superior Slips.

Stove Polish—See *Polish, Stove.***Stretchers Carpet—**

Cast Iron, Steel Points.

Socket.

Bullard's.

Strops, Razor—

Genuine Emerson.

Imitation.

Torrey's.

Badger's Belt and Com.

Lamont Combination.

Jordan's Pat. Padded, list Nov. 1, 89.

Electric Cutlery Co.

Campbell Cutlery Co.

Stuffer, Sausage—

Miles' Challenge.

Perry.

Jordan's Pat. Padded, list Nov. 1, 89.

Draw Cut No. 4.

Enterprise Mfg. Co., list Jan 17, '93.

Silver's.

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5.

Bissell No. 8.

Bissell, Grand.

Standard.

Domestic.

Domestic, No. 2.

Grand Rapids.

Crown Jewel, No. 1.

Crown Jewel, No. 2.

Magic.

Improved Parlor Queen.

Nickel.

Japanned.

Excelsior.

Garland.

Parlor Queen.

Housewife's Delight.

Ladies' Friend.

Ladies' Friend No. 2.

Advance.

Our Leader.

Triumph.

Goshen.

Supreme.

Easy.

Gilt Edge.

Acme.

Imperial.

Grand Republic.

Banner.

The Star.

Reliable.

The Rapid.

Our Own.

Model.

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:

5 dozen in 6 months.

10 dozen in 6 months.

25 dozen in 6 months.

Except on L.F., when 10 dozen price is \$13.50, and 25 dozen \$13.00.

Lawn—

Thompson Mfg. Co.

Swings—

Davies Lawn.

Tacks, Brads &c.—

List October 19, 1889. Old established straight weights. Short Weight goods are sold at lower prices.

Carpet Tacks.

American, Blued.

American, Tin'd and Cop'd.

Steel, Bright and Blued.

Steel, Tinned and Coppered.

Swedes Iron, Blued.

Swedes Iron, Tinned.

American Iron Tacks, Domestic.

Swedes Iron Tacks—

S. S., Blued.

S. S., Tinned.

Lanc., Blued.

Lanc., Tinned.

Glmp and Lace Tacks—

S. S., Blued.

S. S., Tinned.

Lanc., Blued.

Lanc., Tinned.

Basket and Trimmers' Tacks—

Lanc.

Hungarian Nails.

Common and Patent Brads.

Leathered Tacks.

Brush Tacks, S. S.

Looking Glass Tacks, S. S.

Picture-Frame Points, S. S.

Finishing Nails.

Trunk and Coint Nails.

Black.

Tinned or Coppered.

Basket Nails.

Chair Nails.

Cigar Box Nails.

Tin Capped Nails.

Miscellaneous—

Double Point.

Wire Carpet Nails.

Claw Handle Carpet.

Bonnie Blue.

Bill Nye Brad Box.

Parlour Gilt Nails, cartoon.

Home Tacks, No. 50 # case (12 cartons), \$36.00; No. 100, # case (12 cartons), \$72.00.

Home Nails, No. 200, # case (12 cartons), \$30.00; No. 400, # case (12 cartons), \$60.00.

Upholsterers' Nails.

Wire Brads and Nails—

Steel-Wire Brads, R. & E. Mfg. Co.'s list.

See also *Nails, Wire.***Tanks, Oil—**

Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal., \$11 each.

Tapes, Measuring—

American.

Spring.

Chesterman's, Regular list.

Thermometers—

Tin Case.

Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list.

Tinners' Shears, &c —See *Shears, Tinners' &c.***Tinware—**

Stamped, Japanned and Piced, list Jan 20, 1887.

Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.**Tobacco Cutters—**See *Cutters, Tobacco.***Tools—****Coopers'—**

Bradley's.

Barton's.

L. & I. J. White.

Albertson Mfg. Co.

Beatty's.

Sandusky Tool Co.

Shaves Cincinnati Tool Co.

Lumber—

Ring Peavies, "Blue Line".

Ring Peavies, Common.

Steel Socket Peavies.

Mail Iron Socket Peavies.

Cant Hooks, "blue Line".

Cant Hooks, Common Finish.

Cant Hooks, Mail Socket Clasp.

Cant Hooks, Mail Socket Clasp, Common Finish.

Cant Hooks, Clip Clasp, "Blue Line".

Cant Hooks, Clip Clasp, Common Finish.

Hand Spikes.

Pike Poles, Pike & Hook.

Pike Poles, Pike only.

Pike Poles, not ironed.

Setting Poles.

Swamp Hooks.

Saw—

Atkins', new list.

Transom Lifters—See *Lifters, Transom.***Traps— Game—**

Newhouse.

Onida Pattern.

Game, Blake's Patent.

Mouse and Rat—

Mouse Wood, Choker.

Mouse, Round Wire.

Mouse, Cage, Wire.

Mouse, Catch-em-alive.

Mouse, Bonanza.

Rat, Decoy.

Ideal.

Cyclone.

Hotchkiss Metallic Mouse, 5-hole traps.

Hotchkiss New Rat Killer.

Schuyler's Rat Killer.

Dandy.

Triers—

Butter and Cheese.

Trimmers, Spoke—

Bonney's.

Stearns'.

Ives'.

Douglas'.

Cincinnati.

Trowels—

Lothrop's Brick and Plastering.

Reed's Brick and Plastering.

Whips		Length.	4½	5	5½	6	6½	7	7½	8 ft.
American Whip Co.										
X. L. Whalebone Driving			\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone			15.00	16.50	18.00	20.00				
Bull Bone, Half-length Whalebone										
American Standard			8.00	8.50	9.00	10.00	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center			6.00	6.00	6.50	7.00	7.50	8.00		
New Name, Stocked Java, Black and Wine Colors										
Americus, 93 Pen Whip						6.00				
Gents' Light Driving No. 111						6.00				
Gents' Light Driving No. 106						5.00				
Hand-made Stocked Java No. 103						3.75	4.00			
A large variety of cheaper grades										
Team Whips										
Toy Whips										
Hardware Assortment, 10/American, 75 Whips for \$50.00										

Wire and Wire Goods—		Per dozen.
Iron—		
Br. and Ann'd, Nos. 16 to 18		80%
Bright and Ann'd, Nos. 19 to 26		80% 5%
Br. and Ann'd, Nos. 27 to 36		82% 5%
Tinned		85% 10%
Tinned Broom Wire, 18 to 21		4%
Galvanized Fence		75% 10%
Brass, list Jan. 18, 1884		40% 5%
Copper, list Jan. 18, 1884		40% 5%
Annealed Wire on Spools		80%
Extra 10% often given.		

Malin's An'aled & Tin'd on Spools	80% 5%
Malin's Brass and Cop. on Spools	50% 5%
Tate's Spooled, Tin'd & Annealed	60% 5%
Tate's Spooled Cop. and Brass	50%
Cast Steel Wire	50%
Stubs' Steel Wire	\$5.00 to \$2.30
Steel Music Wire, 12 to 30, Imported	60% 70% 80%

Wire Clothes Line, see Lines.	
Wire Picture Cord, see Cord.	
Bright Wire Goods—	
Standard list	80% 20% 85%
Wire Cloth and Netting—	
Painted Screen Cloth, good quality	\$1.00 sq. ft. \$1.40
Galvanized Wire Netting	75% 75% 10%

Wire, Barb—	
See Trade Report.	
Wire Rope—	
See Rope, Wire.	

American Adjustable	40%
Baxter's Adjustable "S"	40% 10% 50%
Baxter's Diagonal	60%
Coe's Genuine	50% 3%
Coe's Mechanics	50% 10% 3%
Clard Standard	65% 10% 70%
Lamson & Sessions' Engineers	60% 10%
Lamson & Sessions' Standard	70% 10%
P. S. & W. Agricultural	
Gilard Agricultural	
Lamson & Sessions' Agric'l.	75% 10% 80%
W. & B. Diamond	

Bemis & Call's:	
Pat. Combination	40%
Merrick's Pattern	35%
Briggs' Pattern	25%
Cylinder or Gas Pipe	40% 5%
No. 3 Pipe	50%
Aiken's Pocket (Bright)	\$6.00, 50% 10%
The Favorite Pocket	\$4.00, 40%
Webster's Pat. Combination	25%
Boardman's	25% 5%
Always Ready	50%
Donohue's Engineer	20% 10%
Eagle	50% 10%
Acme, Bright	50% 25%
Acme, Nickel	40% 25%
Hercules	70% 40% 5%
Walker's	55% 25%
Cincinnati Brace Wrenches	25% 10%
Taft's Vise Wrench	55% 10% 25%

Wringers, Clothes—	
Am. Wringer Co.'s list Jan. 2, '93	25% cash
Colby Wringer Co.'s list Sept. 1, '91	25% cash
Lovell Mfg. Co., list Jan. 1, 1892	25% cash
Greenlee Mfg. Co., list Feb. 1, 1892	25% cash
National Wringer & Mfg. Co., list June 1, 1892	25% cash
Wrought Goods—	
Staples, Hooks, &c., list March 17, 1892	85% 10% 35% 15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—		
Linseed, City, raw	per gal.	50
Linseed, City, boiled		53
Linseed, Western, raw		50
Lard, City, Extra Winter	1.00	
Lard, City, Prime	75	80
Lard, City, No. 1	65	70
Lard, Western, prime		1.00
Cotton-seed, Crude, prime	45	
Cotton-seed, Crude, off grades	40	43
Cotton-seed, Summer Yellow, prime	55	58
Cotton-seed, Summer Yellow, off grades	50	52
Sperm, Crude		1.00
Sperm, Natural Spring		
Sperm, Bleached Spring		
Sperm, Natural Winter	1.00	1.03
Sperm, Bleached Winter	1.05	1.08
Whale, Crude		
Whale, Natural Winter	55	58
Whale, Bleached Winter		58
Whale, Extra Bleached	50	60
Sea Elephant, Bleached		
Menhaden, Crude, Sound	40	
Menhaden, Crude, Southern		
Menhaden, Light Pressed	42	43
Menhaden, Bleached W'ter	45	
Menhaden, Extra Bleached	48	
Tallow, City, prime	70	75
Tallow, Western, prime	65	70
Cocconut, Ceylon	8%	
Cocconut, Cochiti		7%
Cod, Domestic	38	40
Cod, Foreign	42	45
Red Elaine	40	45
Red Saponified	7	7%
Bank	40	41
Straits	41	42
Olive, Italian, bbls	63	65
Neatsfoot, prime	80	90
Palm, prime, Lagos	7%	8%
Mineral Oils—		
Black, 29 gravity, 25 @ 30 cold test	7	7%
Black, 29 gravity, 15 cold test	7%	8
Black, 29 gravity, summer	6	6%
Cylinder, light, filtered	14	16

Cylinder, dark, filtered	10	13
Paraffine, 23½ @ 24 gravity	11	12
Paraffine, 25 gravity	10	11
Paraffine, 28 gravity	7%	8
Paraffine, red	9%	10%

Paints and Colors—		
Barytes, Foreign, 10 ton	\$22.00	@24.00
Barytes, Amer. floated	29.00	@32.00
Barytes, Amer. No. 1	16.00	@18.00
Barytes, Amer. No. 2	13.00	@15.00
Barytes, Amer. No. 3	11.00	@12.00
Blue, Celestial	40	50
Blue, Chinese	25	40
Blue, Prussian	8	25
Blue, Ultramarine	3	1
Brown, Spanish	3	3%
Brown, Vandyke, Amer.	8	8
Brown, Vandyke, English	8	8
Carbide, No. 40, in bulk	2.75	@
Carbide, No. 40, in boxes or barrels	2.85	@
Carbide, No. 40, in ounce bottles	3.75	@
Chalk, in bulk		2.25
Chalk, in bbls	33	40
China Clay, English	13.00	@18.00
Cobalt Oxide, prep'd	9.00	@11.00
Cobalt Oxide, black	1.90	@
Cobalt Oxide, black, lots 100 lb	1.90	@
Green, Paris, in bulk	10	10%
Green, Paris, 170 @ 175	12	@
Green, Paris, small pack	12	@ 11
Green, Chrome, ordinary	6	@ 12
Green, Chrome, pure	22	@ 25
Lead, Eng. B.B. white	8%	@ 10
Lead, Ann. White, dry or in oil	7	@ 7%
Kegs, lots less than 500 lb	6%	@ 6%
Kegs, lots 500 lb to 5 tons	6%	@ 6%
Kegs, lots 5 tons to 12 tons	6%	@ 6%
Kegs, lots 12 tons and over	6%	@ 6%
Lead, White, in oil, 25 lb tin		@ 1%
Lead, White, in oil, 12½ lb tin		@ 1%
Lead, White, in oil, add to keg price		@ 1
Lead, White, in oil, 1 to 5 lb as sorted tins, add to keg price		@ 2%
Lead, Red, bbls. and ½ bbls.	6	@ 7%
Lead, Red, kegs	6%	@ 7%
Litharge, kegs	6%	@ 7%
Litharge, bbls. and ½ bbls.	6	@ 7

TERMS, &c.—Lead and Litharge.—On		
lots of 500 lb or over, 60 days' time or 2½		
% discount for cash if paid within 15 days		
of date of invoice.		
Ocher, Rochelle.....	1.35	@ 1%
Ocher, French Washed.....	1.16	@ 2%
Ocher, German Washed.....	1.14	@ 3%
Ocher, American.....	1.15	@ 3%
Orange Mineral, English.....	8	@ 9
Orange Mineral, French.....	10	@ 10%
Orange Mineral, German.....	8½	@ 9
Orange Mineral, American.....	8¾	@ 9
Paris White, English Clift.....		
Paris White, American.....	1.00	@1.15
Red, Indian, English.....	65	@ 75
Red, Indian, American.....	5½	@ 7
Red, Turkey.....	2	@ 6
Red, Turkey.....	9	@ 14
Red, Tuscan.....	9	@ 11
Red, Venetian, American.....	100	@1.10
Red, Venetian, English.....	1.20	@1.35
Sienna, Italian, Burnt and		
Powd., # 10.....	4	@ 5
Sienna, Ital., Burnt Lumps.....	1½	@ 3
Sienna, Ital., Raw, Powd.....	4½	@ 5½
Sienna, Ital., Raw, Lumps.....	1½	@ 3
Sienna, American, Raw.....	1½	@ 1½
Sienna, American, Burnt and		
Powdered.....	1½	@ 1½
Talc, French.....		@ 1½
Talc, American.....	1½	@ 1½
Terra Alba, Fr'ch, # 100 lb.....	95	@1.25
Terra Alba, English.....	70	@ 80
Terra Alba, American No. 1.....	65	@ 75
Terra Alba, American No. 2.....	45	@ 50
Umber, Turkey, Burnt and		
Powdered.....	3½	@ 4
Umber, Turkey But. Ln.....	2½	@ 3
Umber, Turkey, Raw and		
Powdered.....	3½	@ 4
Umber, Turkey, R'w Lumps.....	2½	@ 3
Umber, Turkey, Bnt. Amer.....	1½	@ 1½
Umber, Turkey, R'w Amer.....	1½	@ 1½
Yellow, Chrome.....	10	@ 25
Vermilion, American Lead.....	11½	@ 12
Vermilion, Quicks'g, bulk.....	57	@ ..
Vermilion, Quicks'g, bags.....	58	@ ..
Vermilion, Quicksilver sm'r		
pkgs.....	62	@ 1
Vermilion, English Import.....	85	@ 90
Vermilion, Imitation, Eng.....	8	@ 35
Vermilion, Trieste.....	90	@ 92½
Vermilion, Chinese.....	92½	@ 95
Whiting Common, # 100 lb.....	37½	@ 42
Whiting Gliders.....	45	@ 55

Zinc, American, dry	4%	@
Zinc, French, Red Seal	7%	@
Zinc, French, Green Seal	9	@
Zinc, French, V. M. X.	7	@
Zinc, Antwerp, Red Seal	7%	@
Zinc, Antwerp, Green Seal	7%	@
Zinc, German, L. Z. O.	6%	@ 7%
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10%	@ 11%
lots less than one ton	11	@ 11%
Zinc, V. M. in Poppy Oil, Red Seal		@
lots of 1 ton and over	10	@ 10%
lots of less than 1 ton	10%	@ 10%
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than bbl. lots.		
Colors in Oil—		
Black, Drop, Frankfort	25	@ 30
Black, Drop, English	12	@ 15
Black, Drop, Domestic	7	@ 10
Black, Lampblack, Best	20	@ 35
Black, Lampblack, Common	7	@ 15
Black, Ivory	8	@ 15
Blue, Chinese	35	@ 40
Blue, Prussian	20	@ 45
Blue, Ultramarine	12	@ 18
Brown, Vandyke	7	@ 12
Green, Chrome	8	@ 13
Green, Paris	15	@ 18%
Sienna, Raw	7	@ 14
Sienna, Burnt	7	@ 14
Umber, Raw	7	@ 10
Umber, Burnt	7	@ 10
Putty—		
In barrels and ½ bbls	.01%	@ .01%
In tubs	.01%	@ .01%
In tin cans	.01%	@ .02%
In bladders	.01%	@ .02%
Spirits Turpentine—		
In regular bbls	35%	@
In machine bbls	36	@
Glue—		
Low Grade	8	@ 10
Cabinet	12	@ 14
Medium White	13	@ 15
Extra White	17	@ 20
French	10	@ 22
English	10	@ 15
Irish	12	@

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